



**REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 CLAY STREET, SUITE 1400
OAKLAND, CA 94612**

***DRAFT*
INITIAL STUDY
AND
PROPOSED MITIGATED NEGATIVE DECLARATION
CASTRO COVE SEDIMENT REMEDIATION PROJECT
RICHMOND, CALIFORNIA**

**STATE CLEARINGHOUSE #
2006092119**

September 25, 2006

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SUMMARY

The Regional Water Quality Control Board, San Francisco Bay Region (Water Board) is adopting Site Cleanup Requirements (SCRs) for Castro Cove, an embayment of San Pablo Bay located in Richmond, California. A remedial action would be conducted in the Cove to address the SCRs.

The proposed remedial action includes removal of contaminated sediments in that portion of the Cove where studies have shown that contaminants present a potential risk to benthic invertebrates—small, sediment-dwelling organisms. With the Water Board Order and permits to conduct the work from the Bay Conservation and Development Commission and the United States Army Corps of Engineers, the impacted sediments would be excavated and removed from the Cove and placed in the Number 1 Oxidation Pond, an upland location within the nearby Chevron Refinery. When removal of the impacted sediments is complete, the biological viability of the Castro Cove would be restored. In addition, after the sediments are placed in the Number 1 Oxidation Pond, this facility would be capped and closed, providing long-term protection of the environment.

The Water Board has completed an environmental analysis of the proposed Castro Cove Sediment Remediation Project in accordance with the California Environmental Quality Act (CEQA) and CEQA Guidelines for Implementation. The environmental analysis consists of an Initial Study and proposed mitigated Negative Declaration.

The Initial Study concludes that the proposed project would not result in any impacts that are not sufficiently addressed by mitigation measures, which are either included as part of the proposed project or have been accepted by the project proponent. There would be no impact on land resources such as housing, public services, land use, agriculture, and minerals because sediment removal would occur within the Cove below the high tide line and stabilization and capping of the Number 1 Oxidation Pond materials would occur within an industrialized area of the Chevron Refinery. Although the project has some short-term construction impacts, these would be less than significant with mitigation and once the project is completed it would have a net beneficial effect on the Castro Cove and nearby upland environments. Therefore, the Water Board is proposing to adopt a mitigated Negative Declaration for the project.

Implementation of the project would eliminate the potential risk that the contaminants in the Cove pose to sediment-dwelling organisms. When the project is complete it would have the beneficial effect of restoring the biological viability of the Cove. In addition, the proposed corrective action provides the opportunity to integrate remediation of Castro Cove sediments and final closure of the Number 1 Oxidation Pond.

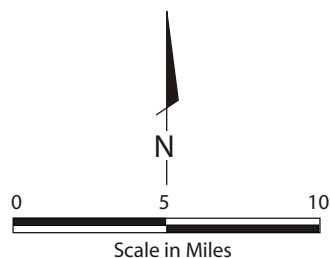
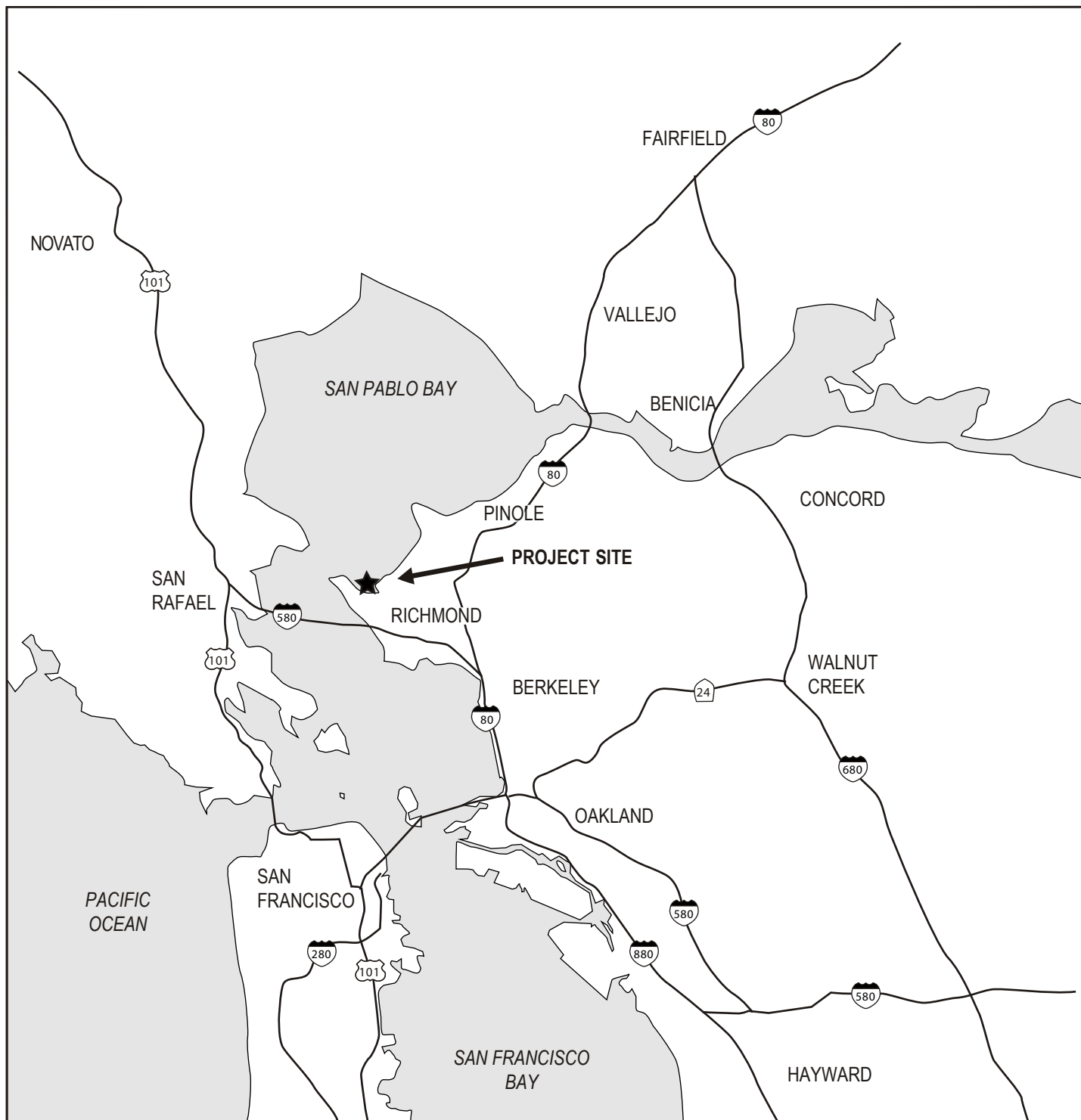
INITIAL STUDY FOR THE CASTRO COVE REMEDIATION PROJECT

The Regional Water Quality Control Board, San Francisco Bay Region (Water Board) has completed the following Initial Study for this project in accordance with the California Environmental Quality Act (CEQA) (Section 21000 et seq., California Public Resources Code) and Guidelines for Implementation (Section 15000 et seq., Title 14, California Code of Regulations). This environmental analysis is an Initial Study (IS) and proposed mitigated Negative Declaration (mitigated NegDec) for the Castro Cove Remediation Project (proposed project).

1.0 PROJECT INFORMATION

Project Title:	Castro Cove Sediment Remediation Project
Lead Agency's Name and Address:	California Regional Water Quality Control Board San Francisco Bay Region 1515 Clay Street, Suite 1400 Oakland, CA 94612
Lead Agency Contact:	Elizabeth Christian
State Clearinghouse #:	2006092119
Project Sponsor's Name and Address:	Chevron USA 841 Chevron Way Richmond, CA 94801
Sponsor's Contact:	Gerald O'Regan, Project Manager
Project Location:	The project site is located in Richmond, California at the Chevron Richmond Refinery and in a shallow embayment of San Pablo Bay adjacent to the Refinery (Figure 1.0-1)
Assessor Parcel No.(s):	561-090-003, 561-090-004, 561-100-013
City of Richmond General Plan Designation(s):	Heavy Industrial Open Space
Surrounding Land Uses:	
North	Open water (San Pablo Bay)
South	Heavy Industry: Chevron Richmond Refinery
East	Municipal landfill and Wetlands (Wildcat Creek Marsh, Castro Creek)
West	Heavy Industry: Chevron Richmond Refinery

The IS and proposed mitigated NegDec are being made available for public and agency review from September 25, 2006 to October 25, 2006. Copies of the IS and proposed mitigated NegDec are available for review at the following location:



REGIONAL LOCATION MAP
 Castro Cove Remediation Project
 Richmond, California
 Initial Study

Figure 1

Richmond Public Library
325 Civic Center Plaza
Richmond, CA 94804

In addition, the IS and proposed mitigated NegDec are available on-line at: http://www.waterboards.ca.gov/sanfranciscobay/pub_notice.htm.

To be considered in the decision making for this project, comments on the IS and proposed mitigated NegDec must be received by October 25, 2006 at the following address:

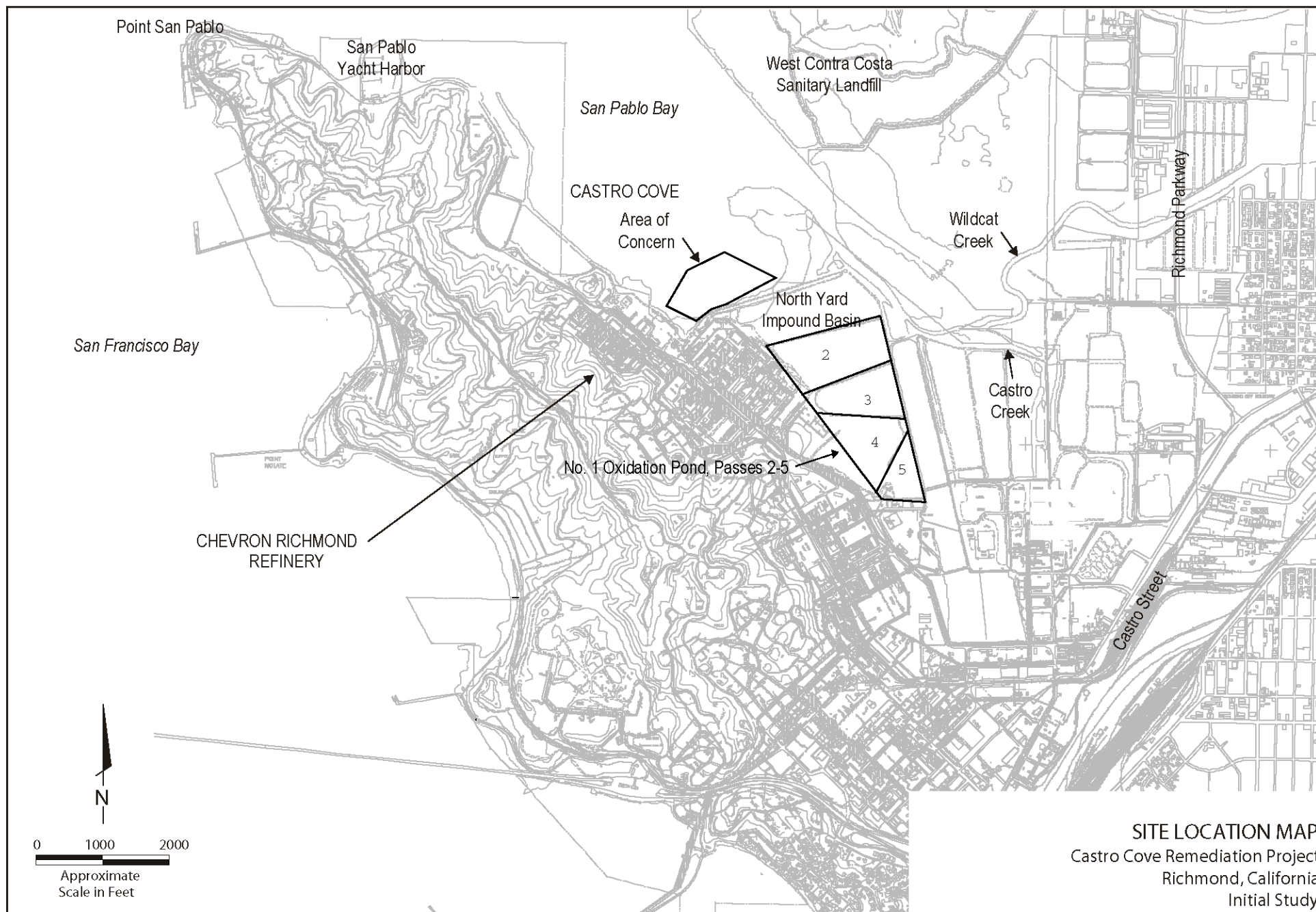
Elizabeth Christian, Project Manager
Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Late comments will not be accepted into the administrative record unless the Regional Board Chair determines that good cause exists to make an exception and that other interested persons will not be prejudiced as a result.

2.0 PROJECT BACKGROUND

The Water Board is adopting an Order that sets site cleanup requirements for Castro Cove (Cove), an embayment of San Pablo Bay located in Richmond, California (Figures 1.0-1 and 2.0-1). The site is located adjacent to the Chevron Richmond Refinery. Site investigations conducted at the Water Board's request by Chevron indicate that historical releases from industrial, commercial and municipal operations have affected near surface sediments in the Cove. These operations have included dredging, urban runoff, sanitary, and other discharges. The primary contaminants of concern are mercury and polycyclic aromatic hydrocarbons (PAHs).

The portion of Castro Cove that would be remediated is about 20 acres in area and is referred to as the area of concern (AOC) or restoration area. The size and depth of the restoration area were delineated based on site investigations and characterization overseen by the Water Board. Site characterization included collecting sediment samples and analyzing them for chemical constituents and testing them for toxicity to fish and amphipods—small sediment-dwelling organisms. The chemical and biological data were used to define the area of contamination and to assess the potential risk that the contaminants presented to wildlife. The chemical results indicated that the shallow sediments in south Castro Cove (to a depth of two feet below the mud-line) have been impacted by historical discharges from refinery operations. The risk assessment concluded that the contaminant concentrations in the AOC pose a potential risk to organisms that live in the upper layers of the sediments (benthic communities).



SITE LOCATION MAP
 Castro Cove Remediation Project
 Richmond, California
 Initial Study

Figure 2.0-1

In 2002 Chevron submitted to the Water Board a Corrective Action Plan that evaluated and recommended technologies for remediating the contamination detected in the upper two feet of Cove sediments (URS, 2002a). Following a review of viable alternatives, the safest and most effective remediation alternative was determined to be hydraulic dredging of the upper two to three feet of sediments within the 20-acre AOC, and placement of dredged materials at the Number 1 Oxidation Pond (No. 1 Ox Pond), which is located south of Castro Cove.

The No.1 Ox Pond is a triangular parcel that is centrally located within the Refinery (Figure 2.0-1). It is divided into five subareas, known as “passes.” It was formerly part of the Refinery’s wastewater treatment system and is subject to a Water Board Order. Interim corrective actions to address contamination in Passes 2 through 5 were approved by the Water Board on June 1, 2004 and have been implemented. The actions included construction of a stormwater drainage channel, mowing of the site to discourage its usage by wildlife, and application of soil binder or other cover to prevent wildlife contact with subsurface materials at the site. Maintenance of Passes 2 through 5 of the No. 1 Ox Pond is ongoing in accordance with the approved interim corrective action plan for the site and will continue until the site is closed. Pass 1 of the No. 1 Ox Pond, which is now known as the North Yard Impound Basin, was clean closed in the past and is used by the Refinery for stormwater storage.

With the approval of the Water Board Order, Chevron would proceed to dredge the contaminated sediments from Castro Cove, to place and stabilize the sediments within the Passes 2 through 5 of the No. 1 Ox Pond and to construct a protective cover or cap over Passes 2 through 5 of the No. 1 Ox Pond. To the extent possible, stabilization of the sediments and construction of the cap would utilize soils that would be available for reuse from the Refinery’s capital improvement projects. Thus, when the project is complete it would have the beneficial effects of restoring the biological viability of the Cove, providing an on-site reuse of Refinery soils, and closing the No. 1 Ox Pond in a manner that would provide long-term protection of the environment.

2.1 PROJECT OBJECTIVES

The Corrective Action Plan defines the Corrective Action Objective for the Castro Cove Sediment Remediation Project as “mitigation of contamination that has created an unacceptable hazard to the environment by restoring the biological viability of the Cove to ecological receptors” (URS, 2002a). Thus, the proposed project would:

- Remove contaminated sediment from the restoration area,
- Place the sediment at an appropriate upland location, and
- Restore the biological viability of the remediated area within Castro Cove.

In addition, placement and stabilization of the Castro Cove sediments and soils from Refinery capital improvement projects in the No. 1 Ox Pond would cover and stabilize the oily sediments in the No. 1 Ox Pond and, in combination with the possible placement of additional clean soil, would prevent human or animal contact with the underlying oily sediments. The cover or cap over the No. 1 Ox Pond would also prevent the movement of the oily sediments in the environment. Thus, the proposed project would also:

- Prevent human and animal contact with oily sediments in the No. 1 Ox Pond
- Prevent movement of the oily sediments in the environment, and
- Lead to final closure of the No. 1 Ox Pond.

2.2 PROJECT LOCATION AND SURROUNDING LAND USES

The Chevron Richmond Refinery is a 3,000-acre facility located in a heavily industrialized area of west Richmond. Castro Cove is a shallow, protected embayment of San Pablo Bay located immediately north of the Chevron Richmond Refinery (Figure 2.0-1). It is defined as the section of San Pablo Bay located immediately north of the Chevron Refinery's North Yard Impound Basin enclosed by a line drawn from the Point San Pablo Yacht Harbor to the West Contra Costa Sanitary Landfill. The Cove is surrounded on three sides by heavy industry and the West Contra Costa Sanitary Landfill. The area subject to the cleanup activities specified in the Corrective Action Plan is entirely within the southern portion of Castro Cove. This part of the Cove is not readily accessible to the public. Access from land is possible only from the Chevron Refinery and access from the Bay is difficult because the project area consists of mudflats at low tide and is covered by only a shallow layer of water at high tide.

The northeastern boundary of the Cove adjacent to the West Contra Costa Sanitary Landfill consists of rubble mound seawalls. A salt marsh and a dike built to contain the Refinery's North Yard Impound Basin form the Cove's southeastern boundary. Salt marshes are reestablishing on portions of the southern and western shorelines. Dikes containing a lagoon and the Chevron yacht harbor form the remainder of the western shoreline. Castro and Wildcat Creeks enter the Cove on the east and empty into a 30- to 75-foot wide channel that transects a portion of Castro Cove in a generally north/south direction.

The No. 1 Ox Pond is located south of Castro Cove within the Chevron Refinery (Figure 2.0-1). The 250-Foot Channel is located east of the No. 1 Ox. Pond and refining operations are located to the west and south. North of the No. 1 Ox Pond is a stormwater storage pond known as the North Yard Impound Basin. A small portion of the site—about half of the eastern edge of Pass 2—is adjacent to San Pablo Bay. The nearest residential property is 1.1 miles south-southeast of the No. 1 Ox Pond.

2.3 SUMMARY OF PROPOSED PROJECT ACTIVITIES

The proposed project includes the following activities:

- Installation of a sheet pile enclosure to prevent dredging work from impacting other parts of Castro Cove and San Pablo Bay
- Removal of contaminated sediments from the restoration area
- Placement of the sediments within Passes 2 through 5 of the No. 1 Ox Pond
- Backfilling of the approximately 1.5-acre area immediately adjacent to the North Yard Impound Basin levee after removal of sediments to provide an area of suitable elevation for cordgrass (*Spartina*) restoration
- Allow natural accretion to backfill the dredged AOC. Add a protective sand layer on the sides of the excavations to resist shoreline erosion during natural accretion

- Monitoring of the restoration of the AOC until all physical and biological criteria have been achieved
- Restoration of *Spartina* removed from the AOC
- Construction of a protective barrier/cap over Passes 2 through 5 of the No. 1 Ox Pond

2.4 SUMMARY OF PREVIOUS SITE INVESTIGATIONS

Castro Cove

Under its authority to administer the Bay Protection and Toxic Cleanup Program, the Water Board requested in June 1998 that Chevron characterize the sediments in Castro Cove for PAHs and other potential chemical contaminants. Sediment characterization programs were performed by Chevron in 1998, 1999 and 2001 to identify chemicals of potential concern, to delineate the extent of impact, to assess exposure pathways and to quantify potential risk to people and to habitat and wildlife species (Dames & Moore, 1999; URS, 2000; URS, 2001b). Tier I and Tier II Ecological Risk Assessments were conducted that divided the Cove into the Creek Channel Area, the Mudflat Area, and the Salt Marsh Area. The tiered risk assessments concluded that the upper two feet of sediments within a 20-acre portion of the Mudflat Area were impacted by discharges from nearby historical operations. The results of the site investigations and risk assessments served as the basis for preparing the Corrective Action Plan (URS, 2002a).

The ecological risk assessments concluded that two chemicals of potential concern—total PAHs and mercury—pose a potential risk to ecological receptors, specifically benthic (sediment-dwelling) organisms. Benthic organisms typically live within a foot of the sediment surface. Sediment samples were collected from the surface to a depth of six feet. The maximum PAH and mercury concentrations at the surface were:

Total PAHs	56 milligrams/kilogram (mg/kg)
Mercury	2.1 mg/kg

The maximum concentrations within the entire vertical sampling profile were:

Total PAHs	507 mg/kg
Mercury	13.0 mg/kg

Concentrations were highest near the center of the restoration area and decreased toward the restoration area's outer edges. The maximum concentrations for both surface and vertical profile samples exceeded the benchmarks (risk screening values) established in the risk assessments for benthic organisms. Based on a combination of the vertical profiles of the chemical sampling results, the rates of accretion in the south Cove, and the maximum depth of bioturbation (the mixing or movement of the sediments by biological processes), the Water Board is requiring that two feet of sediments be removed from the restoration area to address the potential risk the contaminants pose to benthic organisms.

The Water Board selected the two-foot depth of excavation because no risk assessment benchmarks for any parameters were exceeded below a depth of two feet (Dames & Moore 1999), except in an approximately 1.5-acre area in the southwest corner of the AOC where contaminants are found slightly deeper than two feet (URS, 2002d). For the rest of the Cove

surface, one-foot and two-foot samples showed maximum concentrations either at the surface or at a depth of one foot. Concentrations decreased sharply at the two-foot depth. Radioisotope data used to measure the age of sediments indicate that sediments located more than two feet below the surface were laid down before major industrialization of the area surrounding the Cove and thus are unlikely to be impacted by the contaminants found in industrial discharges. These results were used in the decision-making process and are the basis for the Water Board's decision to require the clean up of the 20-acre AOC to a depth of two feet over most of the area and to a slightly greater depth in the 1.5-acre area in the southwest corner of the Cove.

No. 1 Oxidation Pond

The No. 1 Ox Pond is subject to Water Board Order No. 00-043. As a result of the requirements of Board Order 00-043, a risk-based approach to Corrective Action was selected for the site, which required the development of a Corrective Action Plan (CAP) to address petroleum-impacted soil at the site (URS/Parsons, 2002).

The No. 1 Ox Pond is covered by bare soil and plants. Site investigations found that some surface soils contained relatively heavy, nonvolatile oily hydrocarbons. Surface soils are also generally affected uniformly by metals, such as selenium, and locally by lower weight hydrocarbons and PAHs. Total organic carbon ranged from 0.89 to 11 percent. A preliminary human health risk assessment concluded that the constituents of concern at the site do not pose a substantial risk to human health (URS, 2001c). An ecological risk assessment concluded that the primary hazard for wildlife was the potential for birds to contact the oily soils and associated sheens (URS, 2002b). While further action was recommended to address the physical hazards associated with sheens and oily soils, the toxicity of the petroleum-related constituents to wildlife was found to be insignificant.

To satisfy the Order and mitigate the known hazards, a Corrective Action Plan was developed (URS/Parsons, 2002). The selected corrective action for the No. 1 Ox Pond included drainage improvements and mitigation of potential hazards for ecological receptors by constructing physical barriers to exposure and by managing vegetation to make the site less attractive to wildlife. The Water Board issued a letter approving the interim corrective action on June 1, 2004. The Water Board letter indicated that additional corrective actions and/or final closure of the No 1 Ox Pond may be warranted in the future if land use/ownership changed or additional threats to human health or the environment were identified. Although none of these conditions has occurred, Chevron would cap and close the No. 1 Ox Pond as part of the proposed project.

3.0 PROJECT DESCRIPTION

3.1 SUMMARY

To achieve the project objectives, Chevron would implement a cleanup plan to remove impacted sediments from a 20-acre area of Castro Cove and would place the sediments within Passes 2 through 5 of the No. 1 Ox Pond at the nearby Chevron Refinery. Subsequently, the sediments would be stabilized and capped and the No. 1 Ox Pond site would be closed. Once capped and closed, the site would be available for normal refinery use by Chevron, which could include equipment storage areas, maintenance activities,

warehousing and manufacturing.

Site characterization data from the restoration area within the Cove indicate that the upper two feet of sediments contain PAHs and mercury and are toxic to some amphipods. To ensure that this upper layer of sediments is removed and that the biological viability of the Castro Cove is restored, the project would hydraulically dredge the uppermost 2.5 feet of sediments from the area. In an approximately 1.5-acre area in the southwest corner of the restoration area where contaminants are found slightly deeper than two feet, sediments would be excavated to a depth of three feet and the area would be capped. Excavation below three feet in this area is complicated by the fact that the area is adjacent to a levee-supported gravel road, which separates Castro Cove from the North Yard Impound Basin. This levee has a history of subsidence. Excavation deeper than three feet at the toe of the levee would create safety concerns due to the levee's instability. To safely complete the project and to ensure environmental protection in this area, excavated sediments in the 1.5-acre area would be replaced with an engineered cap consisting of a geotextile layer and three feet of clean Bay Mud/silt with a density similar to the removed sediments.

Sediment removal would be achieved by hydraulically dredging the area while it is isolated from the rest of San Pablo Bay (Bay) within a sheetpile enclosure that would be in place for approximately nine months. During sediment removal water levels would be maintained at a relatively constant level within the enclosure to facilitate dredging operations. Enclosure of the area by sheetpiles would also have the beneficial effect of minimizing potential turbidity impacts to the Bay during both sediment removal and backfilling.

The sediment would be hydraulically delivered (pumped) to the No. 1 Ox Pond via pipeline as a slurry. The slurry would be released from the pipe and flow slowly from one pass in the pond to another to facilitate settling of sediments. As the settling area fills with sediments and water, the water would be actively pumped (decanted) out of the settling area to maintain freeboard. Once the sediments have adequately settled out, the decant water would be tested and treated, as necessary, prior to permitted discharge to the Bay. The sediment that collects in the No. 1 Ox Pond and the underlying material would be covered with approximately 60,000 cubic yards (cy) of non-hazardous upland soil from other Chevron Refinery construction projects and, in order to provide structural stability to the cap, the sediment and soil would be stabilized by the in-place addition of cement, fly ash or similar material. An average thickness of approximately 6.5 feet of the sediment, non-hazardous Refinery soils, and Ox Pond materials would be stabilized. On average, this would structurally stabilize approximately the upper three feet of Ox Pond materials and provide a protective layer over the remainder. Finally, the surface of the site would be graded.

Upon completion of the hydraulic dredging and placement of the sediment into the No. 1 Ox Pond, the dredged area within the Cove would be restored. This would involve capping an approximately 1.5 acre portion of the area dredged to 3 feet with clean Bay Mud or other fine muds to bring the surface elevation back to pre-remediation levels. Based on the design of similar caps permitted by the Water Board and successfully constructed in soft Bay sediments, the engineered cap is expected to be comprised of geotextile and clean bay mud layers. The geotextile would separate the underlying sediments from the cap and prevent clean cap material from penetrating into the sediments during placement of cap material. The cap material would be a compatible clean Bay Mud or sandy mud and would be tested for contaminants prior to placement. The cap material would be placed in lifts of

approximately one foot to prevent development of mud waves in the underlying sediment. The cap would be designed to meet the functional objectives of physical and chemical isolation of deeper sediments, prevention of erosion of clean cap material, and substrate for shoreline vegetation.

The remainder of the area would be left uncovered, except that a layer of sand would be used to stabilize and protect the sides of the excavation from erosion once the sheetpile enclosure is removed and tidal flushing of the area resumes. After the sheetpile enclosure is removed, the excavated area would fill with sediments carried into the Cove by the tidal waters—a process referred to as natural accretion. The site would be monitored to ensure that vegetation regrows in wetland areas. If plants recolonize less than 30 percent of their current areal extent in three years, active restoration of the wetlands would be undertaken by appropriately replanting.

The project would consist of the following steps, which are described in the following subsections:

- Mobilization and sheetpile installation;
- Sediment dredging, conveyance, and placement;
- Confirmation sampling, as appropriate;
- Site restoration;
- No. 1 Ox Pond stabilization and construction of cap; and
- Demobilization.

3.2 MOBILIZATION AND SHEETPILE INSTALLATION

Approximately two months would be required to mobilize equipment and materials at the project site and install the sheetpile enclosure. Mobilization would include bringing equipment to the project site, such as the sheetpiling, installing the sheetpile enclosure, constructing the temporary access ramp and setting up the on-shore sediment conveyance system.

Piling Installation and Equipment Delivery

Sheetpiles would be transported to the Cove by barge and driven into position with a vibratory hammer. A vibratory hammer (rather than percussion) hammer is sufficient to drive the pilings based on geotechnical sampling that indicates the subsurface is comprised of fine muds and silts. If a percussion hammer is needed to penetrate stiffer material, it would be used only at low tide when no water is present in the restoration area. A working area approximately 100-feet wide would be required outside the proposed alignment to allow the barges to maneuver and install the piles. A waterproofing insert that expands upon contact with water would be placed in the sheetpile interlocks to form a seal. Seepage through the sheetpile enclosure is not expected.

The enclosure would be sealed during high tide to trap water within. However, before sealing the enclosure, an appropriately sized net would be installed during a low tide event when the mudflats were exposed so that fish could not enter and become entrapped within the enclosure. In addition, to maintain a 4-foot depth of navigable water, pumps would be installed and operated on an as-needed basis to deliver water from the Bay. The hydraulic

dredging equipment would be delivered once the sheetpiling enclosure is completed. This equipment consists of one or more flat bottom barges equipped with booms carrying the dredge head that would be lowered to the Bay floor. Other vessels would be deployed for support operations.

The mobilization would also involve the installation of the delivery pipe system to the No. 1 Ox Pond and other equipment to manage water, as needed, such as pumps to move water between passes within the No. 1 Ox Pond and to the discharge point. In addition, temporary water treatment systems may be required for permitted discharge of decant water to the Bay.

Onshore Preparation

A thin polyvinyl chloride (PVC) liner would be placed over the surface of the No. 1 Ox Pond, which would serve as a physical barrier between the sediment and the Ox Pond materials and facilitate water management.

An approximately 400-foot section of sheetpile would be installed along the south shore of the Cove adjacent to the dike road that forms the outer boundary of the North Yard Impound Basin. This section of sheetpiles would provide support for the dike road during excavation activities. These sheetpiles would be left in place when the project is complete to strengthen the dike that separates the Cove from the North Yard Impound Basin.

Access Ramp Construction

A temporary access ramp would be constructed of clean earthen fill from the shore to the restoration area. The portion of this area containing wetland plants would be covered with mats to distribute the weight of the temporary ramp and minimize compaction of the underlying sediments. After the project is complete, the ramp and mats would be removed and the area would be disced or ripped to loosen the sediments and assist with reestablishing the marsh vegetation.

3.3 SEDIMENT DREDGING, CONVEYANCE, AND PLACEMENT

Sediments would be removed from the Cove by a hydraulic dredge.

Dredging

The boom-mounted hydraulic dredge would be lowered to the Bay floor from a dredge barge, which requires a minimum 4-foot draft. The barge would be maneuvered by a small motor vessel and may be fixed in place using spuds or anchors. Trained operators would be used to control sediment resuspension and redeposition in previously dredged areas. Since hydraulic dredging would entrain water (approximately three to four times the volume of sediment moved), the enclosure would be equipped with an intake pump to deliver water from the Cove to maintain a stable water elevation for the dredge barge.

The dredge head location would be recorded using a real-time global positioning system. The Cove bottom and dredge target profiles would be loaded into a dredge head control software package (HIJACK or similar) allowing constant feedback to the operator during dredging to maintain accurate dredge depths. The vertical accuracy would be in the range of four inches.

Conveyance

The sediment slurry would be pumped to the No. 1 Ox Pond within a pipe attached to floats across the enclosure area to the shore and then run on land to the discharge point within the No. 1 Ox Pond. Booster pumps would likely be required approximately every 2,000 feet to provide sufficient head and capacity to deliver the slurry to the discharge points.

Placement and Dewatering of Sediments

Slurry from the Cove would be discharged to the No. 1 Ox Pond where it would be actively dewatered. Active dewatering means that the water entrained in the slurry would be decanted and then pumped to another area of the No. 1 Ox Pond for temporary containment. The slurry discharge point would be moved periodically using dike-mounted winches and/or very shallow draft surface vessels in order to evenly distribute the slurry. When an area of the No. 1 Ox Pond fills with dewatered sediments, the discharge point and the active dewatering system would be moved to new areas of the No. 1 Ox Pond.

Preliminary tests indicate that the decant water would be suitable for permitted discharge to the Bay; however, final polishing may be performed by the addition of polymer flocculants in injection systems installed in the decant pumps and by using activated carbon filters. Regardless, decant water would be sampled and analyzed, and if needed, treated prior to permitted discharge to the Bay.

3.4 CONFIRMATION SAMPLING

Confirmation sampling would be conducted. Once an area has been dredged to the designated depth, sediment samples would be collected to confirm that the cleanup action has adequately removed impacted sediments. Surface samples would be collected from the dredged area at frequencies following regulatory agency guidelines and would be sent for chemical analyses at a laboratory certified by California's Environmental Laboratory Accreditation Program. United States Environmental Protection Agency procedures for field and laboratory quality assurance and quality control (QA/QC) would be followed.

3.5 SITE RESTORATION

Approximately six acres of marsh vegetation would be affected by the project. Approximately 1.5 acres of low marsh vegetation (primarily cordgrass) and 0.1 acres of high marsh would be removed because they lie within the dredging area. An additional 4.5 acres of vegetation (1.5 acres of low marsh and 3.0 acres of high marsh) are within the sheetpile enclosure but outside of the dredging area. These areas would not receive daily tidal flushing while the sheetpiles are in place. Once hydraulic dredging is complete, the vegetated areas as well as the mudflats would be restored.

The site would be restored by allowing natural accretion to fill most of the dredged area, except for 1.5 acres in the southwest corner of the Cove, which would be covered with engineered backfill (Bay Mud or similar clean fine mud). Natural plant regrowth would be encouraged and vegetation establishment would be monitored in areas that were damaged during the project. The restoration would achieve three objectives: restore the biological viability of the Cove; protect the shoreline adjacent to the restoration area from potential erosion resulting from greater water depths; and cover any locally impacted sediments exposed during the removal process.

Backfill

The 1.5-acre area excavated deeper than 2.5 feet in the southwest corner of the Cove would be backfilled with clean Bay Mud or similar material. The density of the backfill material would match the removed material as closely as possible to avoid mud waves.

Natural Accretion

Radioisotope analysis and comparison of bathymetric charts indicates that most of the Cove naturally accretes an average of $\frac{1}{4}$ to $\frac{1}{2}$ inch of sediments per year. Much greater depositional rates occur in artificially deepened or quiescent areas. Comparison of 1989 and 1998 bathymetric charts shows that the dredged channel approaching the Chevron yacht harbor and Castro Creek near the 250-Foot Channel accreted at approximately six inches per year. Removal of sediments from the restoration area would create an artificial depression below the equilibrium level in the Cove and an accretion rate of two to three inches per year is expected in the southern portion of the Cove. Complete fill of the restoration area by natural accretion is expected to take 10 to 15 years. The benthic community would begin to reestablish itself immediately after the sediment removal. Shoreline erosion would be minimized by placing a 6-inch-thick sand layer over the exposed surface. Experience elsewhere in the Bay has shown that such sand mixes with finer material to form a protective crust.

Revegetation

The south and west banks of the Cove are partly vegetated and some plants have colonized the area that would be excavated, including approximately 1.5 acres of cordgrass (Figure 3.0-1). It is estimated that an additional one acre of cordgrass and pickleweed could be affected by sheetpile installation and maintenance or other activities associated with the site clean up. Vegetation along the banks and within the Cove that was disturbed during the sediment removal activities would be restored.

The marsh vegetation within the sheetpile enclosure but outside the AOC is likely to be impacted during the 6-month sediment removal period. While foliage is expected to die after several months, root stock rhizomes can be expected to survive for a longer period. The condition of the marsh vegetation will be monitored during sediment removal by a wetlands biologist. However, should the cordgrass die, is expected to return within one or two growing seasons. If the vegetation does not recover, the primary restoration method would be natural regrowth coupled with monitoring and a contingency plan for replanting.

Natural recruitment is the preferred method for reestablishing cordgrass in the project area because manual planting usually has a low survival rate. This area has shown rapid colonization by cordgrass in recent years, indicating that when appropriate physical conditions (i.e. substrate elevation and composition and wave energy) are present, natural recruitment is highly likely due to the availability of abundant seeds and propagules and the potential for survival of the original rhizomes. In the area of the site where vegetated marsh occurs and where the vegetation must be removed in order to access impacted sediments, the area would be filled to preconstruction elevations (approximately 0.5 feet below mean higher high water) and natural succession would be allowed to occur. It is anticipated that the considerable seed bank and rhizome stock in the Cove would facilitate rapid revegetation of disturbed areas.



LEGEND



AREA OF BACKFILL



HIGH MARSH



AREA OF EXCAVATION



LOW MARSH



ACCESS RAMP



BOUNDARY OF EXCAVATED AREA



BOUNDARY OF BARGE IMPACT



SHEETPILE COFFERDAM

GRAPHIC SCALE



SCALE: 1"=200'



Regional Water Quality Control Board
San Francisco Bay Region

FIGURE 3.0-1
WETLANDS RESTORATION
Castro Cove Remediation Project
Richmond, California

DATE OF AERIAL PHOTO-DECEMBER 2003

In areas within the temporary sheetpile enclosure but outside the restoration area, where vegetated marsh would be covered due to construction activities (e.g., under the temporary access ramp), the surface would be disced or ripped to a depth of 6 to 12 inches after the cover is removed. Revegetation would be monitored in September of each year (after full growing seasons) and if substantial progress (30 percent cover) after three years is not observed, then planting would occur.

3.6 NO. 1 OX POND STABILIZATION AND CONSTRUCTION OF CAP

The No. 1 Ox Pond contains soft oily sediment with an average thickness of approximately 5.5 feet. The Ox Pond material overlies a layer of low permeability Bay Mud, which has an average thickness of 25 feet. The Ox Pond material is covered by clayey soil ranging from 6 to 12 inches thick.

The hydraulically dredged and placed sediment from the Cove would form an approximately 1- to 1.5-foot-thick layer over the Ox Pond materials. Chevron plans to leave the sediment to dry in the No. 1 Ox Pond. In addition, about 60,000 cubic yards of non-hazardous upland soil from Refinery construction projects would be delivered to the No. 1 Ox Pond and placed on top of the sediment. The sediment and soil would then be stabilized in place with the underlying Ox Pond materials to an average thickness of approximately 6 to 7 feet. The stabilized material would provide a protective barrier or cap over the remaining oily sediments, which would have thickness of approximately 1.5 to 2.5 feet on average and would be underlain by low permeability Bay Mud.

In-place stabilization would be performed by excavators or specialty equipment equipped with injection holes. The specialty equipment would allow for bulk in-place mixing and the addition of stabilization material to the mixture of Cove sediments, Ox Pond material, and non-hazardous Refinery soils. Mixing would achieve a 6- to 7-foot layer of stabilized material.

The stabilization material in this process could be cement, lime, fly ash, bottom ash or cement kiln dust. Based on experience in similar applications, approximately 10 to 20% (by weight) of material would be added to the Cove sediments, Ox Pond material, and non-hazardous Refinery soils to be stabilized. Bench-scale stabilization tests would provide data to design the best type and volume of material to be used. During stabilization, QA/QC procedures would be implemented to ensure that design goals are achieved.

The stabilizing material would be delivered and stored in a manner to minimize dust emissions. A water-based solution of stabilizing material formulated in a pre-mixing plant would be delivered to the mixing platform using a pipeline for immediate use in the stabilization process. Based on typical production rates (2,000 cubic yards per day) on similar projects and assuming two sets of stabilization equipment would be used, it is estimated stabilization would be completed in 4 to 5 months.

Upon completion of stabilization and after a sufficient period of time has elapsed to allow the material to settle and consolidate, the surface of the stabilized material would be regraded, and covered with a layer of clean soil and seeded with upland grasses.

3.7 DEMOBILIZATION

Once the sediment removal activities have been completed, the temporary sheetpile enclosure

and any associated temporary structures and equipment would be removed. Sheetpiles would be decontaminated and salvaged. The slurry pipeline would be removed and disposed of at a properly selected landfill. Stabilization equipment and dredge barges would be decontaminated and removed from the site. Demobilization is expected to take about 6 weeks.

3.8 PROJECT DESIGN MEASURES TO AVOID, MINIMIZE, OR MITIGATE POTENTIAL IMPACTS

Several measures are included as part of the project design that are intended to avoid, minimize or mitigate potential impacts. The measures are summarized here and described in greater detail in Section 6. Chevron, the project proponent, has indicated that it will implement these design measures as part of the project, should the project be approved by the Water Board.

- **Use vibratory hammer to install sheet piles.** Use of a vibratory hammer to install sheet piles would avoid potential impacts to fish during construction.
- **Net the opening of the sheet pile enclosure before closing.** Use of a net to prevent fish from entering the sheet pile enclosure before closing it off from the Bay would avoid potential impacts to fish during construction.
- **Protection of marsh areas within the sheet pile enclosure.** Two small areas of marsh vegetation would be protected during remediation by placing silt curtains around the areas to protect the plants during dredging. Maintenance of these areas during construction would avoid potential impacts to marsh vegetation.
- **Monitor health of marsh vegetation and natural restoration.** The health of marsh vegetation would be monitored during and after construction. The affected areas would be restored by natural regrowth. A contingency plan for replanting would be implemented should natural regrowth be inadequate.
- **Minimize diesel emissions.** Compliance with California laws and BAAQMD regulations that limit vehicle idling and require the use of low-sulfur fuel would reduce potential impacts from diesel emissions.
- **Comply with BAAQMD construction dust control measures and wash truck wheels.** Implementation of the dust control measures identified in Table 2 of the BAAQMD CEQA Guidelines and washing truck wheels, as needed, before trucks leave the site would reduce potential air quality impacts from dust emissions.
- **Comply with BAAQMD Regulation 8, Rule 40.** Implementation of emission controls would reduce potential air quality impacts during handling of petroleum-impacted soils.
- **Prepare and Implement a Health and Safety Plan.** Implementation of a project-specific health and safety plan would reduce the temporary potential impacts to workers from health and safety hazards at the work site.

- **Prepare and Implement a Truck Safety Plan.** Implementation of the truck safety plan would reduce potential impacts from accidents and spills.
- **Implement Chevron's Emergency Response Plan.** Chevron's Emergency Response Plan procedures would reduce potential impacts from upsets or accidents involving hazardous materials, such as fuels for equipment or stabilizing agent.
- **Prepare and Implement a Traffic Control Plan.** Truck traffic levels would be managed to minimize potential impacts on local roadways according to best management practices described in a project-specific Traffic Control Plan. Implementation of the plan would reduce potential impacts induced by project-related vehicle trips.

4.0 REQUIRED PERMITS AND AGENCY APPROVALS

The following agency permits, consultations, and/or approvals would likely be required for the proposed project:

- Water Board – Site Cleanup Requirements and Clean Water Act Section 401 Water Quality Certification
- Bay Conservation and Development Commission (BCDC) – Major Permit
- U.S. Army Corps of Engineers (USACE) – Section 404 and Section 10 Individual Permit
- California Department of Fish & Game (CDFG) – Consultation for RWQCB 401 Certification
- U.S. Fish & Wildlife Service (USFWS) – Section 7 informal Consultation
- National Marine Fisheries Service (NMFS) – Section 7 informal Consultation on migratory fish and endangered fish species
- City of Richmond – Grading Permit

5.0 CONSISTENCY WITH EXISTING GENERAL PLAN, ZONING, AND OTHER APPLICABLE LAND USE CONTROLS

The proposed project is located within the City of Richmond. The proposed project would not result in a change of land use. Currently, the proposed project site consists of tidal mudflats within San Pablo Bay and industrial land within the Refinery that is zoned M-3. Once completed, the remediated portion of the project site would continue to function as tidal mudflats and marsh habitat with no change in land use. The No. 1 Ox Pond would be covered with stabilized material and clean soil. The zoning designation of the area would not change and remain M-3. After closure of the No. 1 Ox Pond the land would be available for typical Refinery uses, which could include equipment storage areas, maintenance activities, warehousing and manufacturing.

6.0 INITIAL STUDY CHECKLIST AND DISCUSSION

The following text discusses the evaluation of the potential environmental impacts of the proposed project. The format follows the Initial Study checklist of the CEQA Guidelines, Appendix G, where each issue, category (e.g., land use and planning, population and housing), and individual question is identified, and a determination is made as to the impact and its significance. Following each subject category is an explanation to support the basis of the impact finding that includes a description of the setting, any significance criteria used, and a discussion of the impacts and mitigation.

A brief explanation or reference of all answers follows each issue. For source citations, see Section 7. Mitigation measures are presented at the end of each discussion for every checklist item (if applicable). As a result of the CEQA process, the project applicant has made and agreed to project design revisions to avoid or mitigate potentially significant environmental impacts to less than significant levels. Additionally, for other potential significant environmental impacts, the Water Board has identified and will impose those mitigation measures to mitigate such impacts to less-than-significant levels. These mitigation measures are set forth in this section.

Based on the analysis presented in this document, the Water Board has determined that the proposed project would not result in any impacts that are not sufficiently addressed by mitigation measures contained herein, which have all been accepted by the project proponent and are included as part of the proposed project. Therefore, a mitigated Negative Declaration will be prepared for this project. None of the conditions described in CEQA or the CEQA Guidelines calling for preparation of an EIR has occurred.

6.1 AESTHETICS

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				✓
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				✓
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			✓	
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?			✓	

Project Activities with the Potential to Create Aesthetic Impacts:

- Installation of sheet pile enclosure and other temporary infrastructure
- Mobilization of heavy equipment
- Stabilization and capping of the No. 1 Ox Pond

Setting:

The project site is located within Castro Cove, a protected embayment of San Pablo Bay, and at the No. 1 Ox Pond within the adjacent Chevron Richmond Refinery. The Cove is located between the refinery and the West Contra Costa Sanitary Landfill. Its eastern boundary consists of rubblemound seawalls protecting the West Contra Costa Sanitary Landfill and portions of Wildcat Creek. The southeastern boundary is comprised of a rubblemound dike, which contains the North Yard Impound Basin for the Chevron Refinery, and salt marsh. Small areas of salt marsh vegetation are reestablishing along the southern and western shorelines of the Cove, adjacent to the operating Chevron Refinery. The No. 1 Ox Pond is a relatively level area with a surface that is covered by bare soil and non-native grasses and other plants. The 250-Foot Channel is located east of the No. 1 Ox Pond and refining operations are located to the west and south. North of the No. 1 Ox Pond is a stormwater storage pond known as the North Yard Impound Basin. There is no land-based public access to the project site.

Discussion:

a. – b. **No Impact.** The project the site is not located within a designated scenic area or a state scenic highway and thus would have no impact on these aesthetic resources.

c. **Less than Significant.** Construction impacts such as sheet pile installation, removal of vegetation, and sediment stabilization would be short-term activities at a site disturbed by ongoing human activity. The Cove would be restored as described in Section 6.7. The surface of the No. 1 Ox Pond would be planted with grasses. Long-term impacts to aesthetic resources in the Cove would be negligible because the project

site would revegetate. The appearance of the No. 1 Ox Pond would improve because the current mixture of bare soil and plants would be replaced with a vegetated cover of grass. After the project is complete, there would be no significant change to the visual character of the site or its surroundings. Views from the shoreline would remain the same. Thus, the proposed project would have a less-than-significant impact on the visual character and quality of the site and its surroundings.

d. **Less than Significant.** The proposed project would not create a new, permanent source of light or glare that would adversely affect daytime or nighttime views in the area. Hydraulic dredging and sediment stabilization would occur primarily during daylight hours. Temporary lighting may be used during the project to ensure worker safety. This short-term use of lighting would not have a significant visual impact.

Cumulative Impacts:

Project activities, such as hydraulic dredging, installation of the sheet pile enclosure, and sediment handling would cause only temporary changes in the visual environment and would be visible primarily to on-site personnel. Because the Castro Cove would return to its previous condition once site restoration is complete and the No. 1 Ox Pond would have a vegetated cover, no cumulative impacts would result from construction or implementation of the site cleanup.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.2 AGRICULTURE

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				✓

Project Activities with the Potential to Create Agriculture Impacts:

- None

Setting and Discussion:

a. – c. **No Impact.** The proposed project would have no impact on agricultural resources because the project site is not farmland and does not include agricultural resources.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.3 AIR QUALITY

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?			✓	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			✓	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?			✓	
d) Expose sensitive receptors to substantial pollutant concentrations?				✓
e) Create objectionable odors affecting a substantial number of people?			✓	

Project Activities with the Potential to Create Air Quality Impacts:

- Operation of diesel-powered heavy equipment
- Operation of diesel-powered trucks to transport stabilizing materials and cover soil to the site
- Mixing of stabilizing material with the upper foot of soil and underlying three to four feet of oily sediments

Setting:

The project site is located in the City of Richmond, within the boundaries of the San Francisco Bay Area Air Basin. Richmond's proximity to the onshore breezes stimulated by the Pacific Ocean provide for generally very good air quality. However, during the ozone smog season (summer and fall), transport studies have shown that emissions generated in Richmond and other East Bay cities are often transported to other regions of the Bay Area and beyond (e.g., Central Valley) that are more conducive to the formation of ozone smog. In the winter, reduced solar energy and cooler temperatures diminish ozone smog formation, but increase the likelihood of carbon monoxide formation.

The federal Clean Air Act of 1970 established maximum allowable concentration criteria standards for six ambient air pollutants - ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. Each of these standards was set to meet specific public health and welfare criteria. Individual states were given the option to adopt more stringent state standards for criteria pollutants and to include other pollutants. California has done so with many pollutants through its own clean air act. The Bay Area Air Quality Management District (BAAQMD) is the regional agency with

regulatory authority over stationary sources in the Bay Area, while the California Air Resources Board (CARB) has regulatory authority over mobile sources such as construction equipment, trucks, and automobiles throughout the state. The BAAQMD has the primary responsibility to meet and maintain the state and federal ambient air quality standards in the Bay Area. These regulated ambient air pollutants and their state and federal standards are provided in Table 6.3-1.

Both the state and federal Clean Air Acts require areas to be classified as either attainment or non-attainment for each criteria pollutant, based on whether or not the state and national standards have been achieved. Therefore, areas in California have two sets of attainment/non-attainment designations: one for federal standards and one for state standards. The San Francisco Bay Area Air Basin is currently designated as non-attainment for the state 1-hour ozone standard. The Air Basin is also non-attainment for the state PM_{10} standards. PM_{10} is a term used to describe very fine particles of inhalable dust—particles that are ten microns or less in diameter. Urbanized portions of the Bay Area (specifically known as the San Francisco - Oakland - San Jose federal planning area) are designated “maintenance” with respect to the federal carbon monoxide standard. The “maintenance” designation denotes that the area, now “attainment,” was once designated as “non-attainment.” The Air Basin is designated as either attainment or unclassified for all other pollutants.

Table 6.3-2 shows ambient levels of ozone measured at the BAAQMD’s monitoring station on Rumrill Boulevard in San Pablo, which is the district’s monitoring station closest to the project site. Ozone levels measured at the station have equaled or exceeded the state’s 1-hour standard on three days in the past three years. Maximum 1-hour ozone concentrations at the San Pablo station are comparable to maximum values at other Bay Area monitoring stations, which ranged from 0.09 parts per million (ppm) to 0.11 ppm in 2004. Highest ozone concentrations and the greatest number of days exceeding the standard tend to occur at inland locations, such as Livermore.

Table 6.3-3 shows PM_{10} levels measured at the San Pablo station. PM_{10} levels measured at the station have not exceeded the federal standard, and have exceeded the state’s current standard on only four days in the past three years. Maximum PM_{10} concentrations at the San Pablo station are comparable to maximum values at other Bay Area monitoring stations, which ranged from 42 micrograms per cubic meter ($\mu g/m^3$) to 65 $\mu g/m^3$ in 2004. The average PM_{10} concentration at the San Pablo station was 21.2 $\mu g/m^3$ in 2004. Average PM_{10} concentrations ranged from 18.0 to 26.0 $\mu g/m^3$ across the Bay Area Air Basin. Highest PM_{10} concentrations and the greatest number of days exceeding state standards tend to occur at South Bay locations, such as San Jose.

Table 6.3-1

FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS	FEDERAL STANDARDS	
		CONCENTRATION	PRIMARY	SECONDARY
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	--- ²	Same as Primary Standard
	8 Hour	0.07 ppm (137 µg/m ³) ¹	0.08 ppm (157 µg/m ³)	
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	150 µg/m ³	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m ³	50 µg/m ³	
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard	65 µg/m ³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m ³	15 µg/m ³	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m ³)	9.0 ppm (10 mg/m ³)	---
	1 Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)	---	
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	---	0.03 ppm (80 µg/m ³)	Same as Primary Standard
	1 Hour	0.25 ppm (470 µg/m ³)	---	
Lead	30 Day Average	1.5 µg/m ³	---	---
	Calendar Quarter	---	1.5 µg/m ³	Same as Primary Standard
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	---	0.030 ppm (80 µg/m ³)	---
	24 Hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)	---
	3 Hour	---	---	0.5 ppm (1300 µg/m ³)
	1 Hour	0.25 ppm (655 µg/m ³)	---	---

Source: California Air Resources Board, July 2003

ppm=parts per million

mg/m³=milligrams per cubic meter

µg/m³=micrograms per cubic meter

1. This standard was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.
2. As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas. The San Francisco Bay Area Basin is not an EAC area, so there is no longer a 1-hour ozone standard for this basin.

Table 6.3-2
HIGHEST DAILY MAXIMUM HOURLY OZONE MEASUREMENTS AND NUMBER OF DAYS
ABOVE THE HOURLY STANDARD AT SAN PABLO (RUMRILL BOULEVARD STATION) IN
PARTS PER MILLION (PPM)

	2002		2003		2004	
High	Oct 13	0.07	Jun 25	0.09	Oct 12	0.11
2 nd High	Oct 7	0.06	Sep 21	0.08	Sep 5	0.09
3 rd High	Oct 20	0.06	Mar 30	0.07	Apr 26	0.09
4 th High	Oct 6	0.06	Jun 26	0.07	Apr 25	0.08
Days above State Standard of 0.09 ppm		0		0		1

Source California Air Resources Board web site at www.arb.ca.gov October 2005. Data are not available for this location prior to 2002.

Table 6.3-3
HIGHEST DAILY MAXIMUM PM₁₀ MEASUREMENTS
AT SAN PABLO (RUMRILL BOULEVARD)
IN MICROGRAMS PER CUBIC METER (µg/m³)

	2002		2003		2004	
High	Nov 28	67.0	Jun 2	47.9	Oct 12	62.0
2 nd High	Dec 4	55.3	Oct 24	45.4	Dec 5	41.7
3 rd High	Nov 16	51.2	May 21	36.2	Apr 27	36.5
4 th High	Oct 29	34.8	Sep 12	36.0	Jun 14	36.2
Days above State Standard of 50 µg/m ³		3		0		1
Days above National Standard of 150 µg/m ³		0		0		0

Source California Air Resources Board web site at www.arb.ca.gov October 2005. Data are not available for this location prior to 2002.

As a measure to limit the emission of diesel particulate matter, California law prohibits commercial motor vehicles from idling for more than five minutes, with certain exceptions, such as when queuing to pick up a load, or idling necessary to power other equipment such as a crane, hoist or lift (Title 13 CCR §2485). In addition, California law requires that only low-sulfur diesel (15 ppm) be sold according to the following schedule: June 1, 2006, all diesel fuel sold by a production facility; and September 1, 2006, all diesel fuel sold at retail stations or bulk purchaser-consumer facilities directly involving the fueling of vehicles (Title 13 CCR §2281). Project vehicles would comply with these laws.

Table 6.3-4 shows trends in regional exceedances of the federal and state ozone standards. Because of the exceedances, the BAAQMD considers ozone the pollutant of greatest concern in the Bay Area. Bay Area counties experience most ozone exceedances during the period from April through October. Construction equipment and motor vehicles emit the ozone precursors reactive organic gases (ROG) and nitrogen oxides (NO_x). These emissions may photochemically react in the presence of sunlight and warm temperatures, creating ozone smog. Often, because of wind patterns, this transformation occurs some miles distant. Thus, emissions in coastal areas may not have a local impact but could contribute to existing regional violations of state and federal ozone standards.

The BAAQMD's Regulation 8, Rule 40 (Organic Compounds, Aeration of Contaminated Soil and Removal of Underground Storage Tanks) describes requirements for controlling the emission of organic compounds during the handling of petroleum-impacted soil (while in this situation the oily sediments involved are impacted by primarily non-volatile heavy hydrocarbons). During excavation, removal and backfilling activities of petroleum-impacted soil, exposed soil surfaces must be kept visibly moist by water spray, treated with an approved vapor suppressant or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. Written notice of intent to excavate petroleum-impacted soil must be sent to the BAAQMD at least five days before beginning the excavation.

The closest sensitive receptors to the proposed project are residential neighborhoods located in the City of Richmond and in North Richmond, which is outside of the Richmond city limits in Contra Costa County. Trucks traveling to and from the site would use the Richmond Parkway, which passes to the west of this area. The residential areas are approximately 1.5 miles east and 1.1 miles south of the proposed project. Land uses within a mile of the project site include the Chevron Refinery and other industrial uses and the West Contra Costa Sanitary Landfill.

Discussion:

a – c. **Less than Significant with Mitigation.** The completed project would not emit air pollutants but trucks and earth-moving equipment would produce short-term air emissions including ozone precursors, carbon monoxide and PM₁₀ during construction. However, the small number of excavators and other equipment needed to stabilize and grade the No. 1 Ox Pond would not substantially affect local air quality. The transport of stabilizing materials to the No. 1 Ox Pond is expected to generate approximately 40 truck

round trips per day for approximately three months. Project-related truck trips would be a relatively small proportion of the overall number of vehicles that use nearby roads, such as Castro Street and the Richmond Parkway, on a daily basis. Traffic flows generally range from 1,200 to 2,200 vehicles per hour on Castro Street and the Richmond Parkway during morning and evening commute hours in the commute direction with a maximum of approximately 2,400 vehicles per hour at the intersection of the Richmond Parkway and Gertrude Street. See Section 6.15, Traffic and Transportation for a discussion of potential project impacts on traffic.

Table 6.3-4
SUMMARY OF OZONE DATA FOR THE SAN FRANCISCO BAY AREA AIR BASIN
1995-2004^(a)

YEAR	NUMBER OF DAYS STANDARD EXCEEDED			OZONE CONCENTRATIONS (PPM)	
	STATE 1-HR	FEDERAL 1-HR	FEDERAL 8-HR ^(b)	1 HR (MAX 1-HR)	8 HR (MAX 8-HR)
2004	7	0	0	0.113	0.084
2003	19	1	7	0.128	0.101
2002	16	2	7	0.160	0.106
2001	15	1	7	0.134	0.102
2000	12	3	4	0.152	0.114
1999	20	3	9	0.156	0.122
1998	29	8	16	0.147	0.111
1997	8	0	—	0.114	0.084
1996	34	8	—	0.138	0.112
1995	28	11	—	0.155	0.115

Source California Air Resources Board web site at www.arb.ca.gov October 2005

(a) This table summarizes data from all of the monitoring stations within the Bay Area

(b) As of June 15, 2005 EPA revoked the [1-hour ozone standard](#) for the San Francisco Bay Area Air Basin. The previous standard was 0.12 ppm

ppm = parts per million

Although construction activities emit carbon monoxide and ozone precursors, “these emissions are included in the emission inventory that is the basis for regional air quality plans, and are not expected to impede attainment or maintenance of ozone or carbon monoxide standards in the Bay Area” (BAAQMD 1999). The BAAQMD identifies PM₁₀ as the pollutant of greatest concern with respect to the construction phase of projects because it can be generated from typical construction activities such as grading, excavating, and vehicle travel (on paved and unpaved surfaces) that create dust. “Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces.” (BAAQMD 1999) This project incorporates measures that are recommended by the BAAQMD to reduce dust emissions from projects greater than four acres. In addition, if

dirt is observed adhering to truck wheels during material unloading activities at the No. 1 Ox Pond, truck wheels would be washed to remove the materials before the vehicles leave the site. This would prevent trucks from carrying these materials onto public roads and eliminate this potential source of PM₁₀. Because the BAAQMD-recommended dust control measures and wheel washing are incorporated as part of the project, the emissions of PM₁₀ from construction activities would be less than significant.

The project would mix stabilizing material with Ox Pond materials that contain primarily heavy, non-volatile oily hydrocarbons. This process could volatilize some materials but would be mitigated by mixing the materials in place, that is, the mixing zone would be below ground. In addition, the BAAQMD's procedures described in Regulation 8, Rule 40 would be implemented, that is, the soil would be kept visibly moist and/or vapor suppressant would be applied to reduce emissions during the handling of impacted soils. Implementation of these measures would reduce air emissions to a level that is less than significant.

d. **Less than Significant.** There are no sensitive receptors within one mile of the project site. Therefore, temporary impacts due to construction would not have the potential to expose sensitive receptors to substantial pollutant concentrations. The proposed project would not create operational emissions that could potentially affect air quality.

e. **Less than Significant.** The proposed project would not create objectionable odors that could potentially affect a substantial number of people. Hydraulic dredging and pumping of the sediment slurry would not produce substantial odor. The potential impact due to odors released by stabilization activities would be temporary and limited in areal extent within Refinery property. Therefore, the impact due to the release of objectionable odors would be less than significant.

Cumulative Impacts:

BAAQMD CEQA Guidelines state that if a project is found not to individually cause significant impacts to air quality, cumulative impacts should be determined based on an evaluation of the project's consistency with applicable General Plans and whether it would affect conformance of the General Plan with the regional air quality plan. The proposed project is located within the City of Richmond. The proposed project would not affect the conformance of the City General Plan with the most recent regional air quality plan (the *Bay Area 2000 Clean Air Plan*) because it would not result in an operational activity that would increase emissions in the area (i.e., it would not contribute to an increase in population or vehicular traffic) (BAAQMD 2000). Therefore, the proposed project would not result in cumulative impacts to regional air quality.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Comply with BAAQMD construction dust control measures and wash truck wheels.** Implementation of the dust control measures identified in Table 2 of the BAAQMD CEQA Guidelines and washing truck wheels, as needed, before trucks leave the unloading areas would reduce potential air quality impacts from dust emissions.
- **Comply with BAAQMD Regulation 8, Rule 40.** Implementation of emission controls would reduce potential air quality impacts during handling of petroleum-impacted soils.
- **Minimize diesel emissions.** Compliance with California laws and BAAQMD regulations that limit vehicle idling and require the use of low-sulfur fuel would reduce potential impacts from diesel emissions.

Mitigation Measures Required by this Environmental Document: None are needed.

6.4 BIOLOGICAL RESOURCES

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		✓		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				✓
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		✓		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			✓	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓

Project Activities with the Potential to Create Impacts to Biological Resources:

- Installation of sheet piles
- Closing of sheet pile enclosure
- Construction of temporary access ramp
- Stabilization and capping of the No. 1 Ox Pond

Setting:

Five general types of habitats are found within Castro Cove—non-native annual grassland, rocky intertidal, salt marsh, intertidal mudflat, and shallow subtidal habitat. A peninsula of salt marsh extends into the Cove on the southeast side. The mouth of Castro Creek is in the southeast corner of the Cove, and at low tide creek outflow is the sole source of water in the Cove. At low tide a large percentage of the Cove is intertidal,

exposing mudflats comprised of deep beds of very soft, silty mud. Adjacent habitats include San Francisco Bay to the north and Wildcat Marsh to the east. Refinery operations occupy lands to the south and west of the Cove. The No. 1 Ox Pond is an inactive, former wastewater treatment unit. The surface of the No. 1 Ox Pond is covered by bare ground, weeds, grasses, and infrastructure (e.g., roads, drainage channel). The Cove ecosystem and No. 1 Ox Pond are further described in the following sections.

Non-native Annual Grassland Ecotone. This habitat occurs on the upper portion of the rip rapped slope of the North Yard Impound Basin perimeter levee road, on a small knoll in the southwest corner of the Cove and within the No. 1 Ox Pond. Dominant species include ice plant (*Carpobrotus edulis*) and fennel (*Foeniculum vulgare*), wild oat (*Avena fatua*) and Italian rye (*Lolium multiflorum*). Near the Cove, this community occupies a narrow, linear corridor and provides limited refugial cover for marsh fauna during extreme tides. The No. 1 Ox Pond is managed in accordance with the Water Board approved interim corrective action which includes engineered drainage and vegetation management to discourage wildlife use of the site.

Rocky Intertidal. This habitat occurs on the lower portion of the rip rapped slope of the North Yard Impound Basin perimeter levee road. Macro algae and invertebrates may colonize rocky intertidal habitat. It can also provide habitat (potential cover and forage) for aquatic organisms when submerged.

Salt Marsh Habitat. The Castro Cove tidal salt marsh is comprised of two vegetation communities: low marsh and high marsh. The dominant low marsh plant species is native Pacific cordgrass (*Spartina foliosa*), as confirmed by genetic testing in 2004 by the Spartina Project (Katy Zaremba, 2004). A hand full of hybrid cordgrass clones is present in the Cove. The hybrid clones are a cross between the native species and a non-native, introduced species of cordgrass. The clones were treated with herbicide in fall 2005 by the Spartina Project. One goal of the Spartina Project is to remove the non-native and hybrid cordgrass clones from the Bay. The area of native Pacific cordgrass that would be enclosed by the sheet pile enclosure is approximately three acres based on an overlay of the project layout on a recent aerial photo (Figure 3.0-1). Of these three acres, about 1.5 acres are within the proposed excavation area.

The high marsh community also occupies approximately three acres of the area that would be enclosed by the sheet pile enclosure. However, only about 0.1 acre lies within the excavation area. The dominant plants in the high marsh community are pickleweed (*Salicornia virginica*), saltgrass (*Distichlis spicata*), monkey flower (*Grindelia sp.*), jaumea (*Jaumea carnosa*), and alkali heath (*Frankenia salina*).

Salt marsh habitats typically support a few mammalian species, although abundance may be high. Terrestrial avian diversity for any given habitat is dependent on foliage density, foliage height diversity, and patchiness, as well as prey abundance. Castro Cove's plant community was observed to have limited structural diversity and limited availability of yellow sand crabs, the preferred prey of the endangered California clapper rail (*Rallus longirostris*) (CH2M Hill, 1982). [See results of clapper rail surveys discussed below.] The functions and values of the salt marsh located on the south and west sides of Castro

Cove in the project area are limited by a number of factors, including a narrow linear configuration and a lack of complexity (e.g., has almost no internal tidal sloughs).

Intertidal mudflats. When the tide recedes, Castro Cove provides intertidal mudflat habitat that is foraging habitat for many species of water birds including: American avocets (*Recurvirostra americana*), black-necked stilts (*Himantopus mexicanus*), and willets (*Catoptrophorus semipalmatus*). Benthic invertebrates are important prey for a variety of shorebirds. Physical characteristics (e.g., sediment particle size distribution) can be an important determinant of which benthic invertebrates can inhabit an area. The number of benthic invertebrate species may also be seasonally influenced. Benthic invertebrate diversity was reported to increase with increasing distance from marsh creeks (CH2M Hill, 1982). Polychaetes were reported to be the most abundant invertebrate species in this study, whereas numbers of deep burrowing species were depressed.

Shallow Subtidal. Castro Cove is a sheltered embayment that provides important open water habitat during high tide. When the tide is in, migratory waterfowl and other water birds may utilize the Cove as a staging and foraging area. Midwater and epibenthic fish species that have been reported to occur in the Cove include striped bass and starry flounder. Starry flounders are reported to actively feed on polychaetes, amphipods, and mollusks in Castro Cove (CH2M Hill, 1982). Fish are important prey for osprey and brown pelican and these species have been observed successfully foraging in the Cove (Dames & Moore, 1996).

Discussion:

a. **Less than Significant with Mitigation.** Some wildlife species may use Castro Cove and nearby tidal marsh for seasonal activities such as resting, foraging, roosting, and breeding. Other wildlife species that are less mobile and more highly dependent upon the specific habitats found in the marsh may be permanent residents in or near the project site. The No. 1 Ox Pond is managed in accordance with the Water Board-approved interim corrective action, which includes engineered drainage and vegetation management to discourage wildlife use of the site. The following discussion is intended to identify those plant and wildlife species of federal and state concern that have some potential to occur in or near the project site. Species information is based upon local records of sightings for the species within the region surrounding the project site as listed in a California Natural Diversity Data Base (CNDDB) search of the San Quentin United States Geological Service (USGS) 7.5 Quadrangle on August 16, 2005; analysis of documented habitat requirements for these species; a literature review of species accounts, surveys in and around the project site; and field surveys conducted by qualified biologists (URS 2005).

The United States Fish Wildlife Service (USFWS) provided a list of all “Endangered and Threatened Species that May Occur in or be Affected by Projects in the San Quentin Quad,” which served as the basis for the species listed in Table 6.4-1 (USFWS 2005). Table 6.4-1 is presented at the end of this section. A total of 62 animals and 11 plants were identified as species listed as endangered, threatened, rare, proposed or candidate for listing, or species of concern at the federal and state levels that could potentially occur

within the San Quentin Quadrangle. Additionally, two plants with no federal or state status were identified by the California Native Plant Society (CNPS) as rare, threatened, endangered, or presumed extinct in California. Review of these species indicate that 18 animals and 3 plants have some potential to occur in the project area given the suitability of the habitat available there and the known range, location, and habitat requirements each species.

Critical habitats for four wildlife species that are federally listed as endangered, threatened, or candidate status were also identified by the USFWS listing. None of these habitats occur in the project impact area. Table 6.4-1 includes all the species listed on the USFWS San Quentin Quadrangle and the CNDDDB list, each species status (federal, state, and CNPS), each species habitat requirements, and a brief explanation of species occurrence potential in the project site.

Among the 18 special status wildlife species with some potential to occur in the project area, the proposed project could potentially impact eight wildlife species that are listed as federal and state endangered, threatened, fully protected, or candidate species and ten species that are listed as federal or state species of concern, or are afforded some other protection by the state. These species are listed and discussed in the following two subsections.

Potential Impacts to Federal and State Listed Wildlife Species

The following eight endangered, threatened, fully protected, or candidate species are identified in Table 6.4-1 as having potential to occur at the project site.

- Green sturgeon (*Acipenser medirostris*)
- Steelhead – Central California Coastal Environmentally Significant Unit (ESU) (*Oncorhynchus mykiss*)
- Salt marsh harvest mouse (*Reithrodontomys raviventris*)
- White-tailed kite (*Elanus leucurus*)
- California black rail (*Latterallus jamainensis coturniculus*)
- California brown pelican (*Pelecanus occidentalis californicus*)
- California clapper rail (*Rallus longirostris obsoletus*)
- California least tern (*Sterna antillarum* (=albifrons) browni)

Green sturgeon may forage in San Pablo Bay during winter migration to freshwater stream habitat, which provides spawning habitat the following summer. The green sturgeon has no teeth, swallowing small fish and invertebrates whole while sifting muddy bottom sediments. Installation of the sheet pile enclosure and equipment maneuvering would reduce the sturgeon's potential foraging habitat. However, the loss would be

temporary; only lasting approximately nine months and would affect 20 acres of foraging habitat, a relatively small proportion (less than one percent) of available foraging habitat. Impacts would also be buffered by connectivity to the open water foraging habitat of the San Pablo Bay. Restoration of the site would improve future foraging habitat.

Conducting the dredging behind a sheetpile enclosure would avoid habitat disturbance during work. Fish would be prevented from entering the work zone by the enclosure, which would avoid exposure to direct impacts to individuals. Similarly, impacts from sediment disturbance would be contained within the enclosure and therefore would not affect the neighboring areas of Castro Cove where fish may be foraging.

The construction of the sheetpile enclosure, however, could affect fish, including sturgeon. Disorientation and potential take of sturgeon could result from pile driving or other equipment use within the water column that would cause vibration, noise, and temporary increases in turbidity levels in Castro Cove and the waters of San Pablo Bay. Potential take of the species could also occur if the fish were stranded behind the sheet pile enclosure after it was closed off.

Although it is unlikely that green sturgeon would be adversely affected by short-term impacts related to the sheet pile enclosure, Mitigation Measure BIO-1 is proposed to eliminate all possibility, though slight, that the species would be affected by project activities.

A review of available information suggests that there may have been a **Steelhead (Central California Coastal ESU)** run in the creek prior to the construction of multiple barriers. It also concludes that the current steelhead in the creek are from 1983 stocking events by East Bay Regional Park District (Leidy et al., 2003). Because the entrance to Wildcat Creek is adjacent to Castro Cove on the east, steelhead may still be found in the vicinity of the project site. The greatest threat of impact to the species is during their respective spawning migrations to freshwater (typically January to April) or during their emigrations (typically March to June) to the ocean as smolts.

Potential impacts to steelhead would be the same as those described above for green sturgeon. These potential impacts would be eliminated by Mitigation Measure BIO-1. By implementing the design measures and Mitigation Measure BIO-1, impacts to green sturgeon or steelhead would be reduced to levels that are less than significant.

Potential **salt marsh harvest mouse** habitat occurs in the southwest corner of the project area. The nearest recorded occurrence of the species is located approximately 0.85 kilometer (0.5 mile) to the east in Wildcat Creek Marsh. The breeding season for salt marsh harvest mouse ranges from early March through November, with no specific peak times noted (Goals Project, 2000).

Although species surveys were not conducted for the project, USFWS has previously indicated that the presence of salt marsh harvest mouse in the project area should be assumed if suitable habitat is present (Hankins, 2001, personal communication). The habitat quality for salt marsh harvest mouse is low because there are only a few small

patches of pickleweed and limited area of dense cover. The area is also somewhat isolated from more favorable habitat (east of the project area) by a narrow strip of rocky intertidal habitat. Less than three acres of middle to high elevation salt marsh habitat located in the southwestern corner of Castro Cove would be impacted by excavation and moving equipment.

Although the quality of the potential salt marsh harvest mouse habitat is low there is nevertheless some potential for the mouse to be present. Potential take of individual salt marsh harvest mice would be avoided by implementing Mitigation Measure BIO-2. Impacts to the 0.1 acres of high marsh that would be dredged and the three acres of high marsh that would be inundated within the sheetpile enclosure salt marsh harvest mouse habitat would be fully compensated. This requirement is addressed by Mitigation Measure WET-1. By implementing Mitigation Measures BIO-2 and WET-1, potential impacts to salt marsh harvest mouse would be reduced to levels that are less than significant.

The **California black rail** occurs in tidal and brackish marshes bordering larger bays. As much as 90 percent of the black rail population is associated with the tidal marshlands of the San Francisco Bay, and is often associated with large stands of pickleweed (Goals Project 2000). In this regard, the habitat requirements of the black rail are very similar to those of salt marsh harvest mouse. The black rail may begin breeding as early as mid-February, and the breeding season typically lasts through June. Due to the furtive nature of this species, it is rarely seen except during very high tide periods when it is flushed out of lower elevation pickleweed marsh.

The nearest known California black rail occurrence is located approximately 0.85 kilometer (0.5 mile) to the east of the project area in the Wildcat Creek Marsh (CDFG 2005). No black rails were heard during the California clapper rail 2005 nesting season surveys (Avocet Research Associates, 2005). Because black rails are known to reside in the wetland habitat in the vicinity of the project site, the proposed project may impact any residual nesting birds and associated foraging habitat when construction activities commence in early February.

Potential impacts to the California black rail will be avoided or minimized by implementing Mitigation Measures BIO-3 and WET-1. Marsh habitat that must be temporarily disturbed in the southwestern corner of Castro Cove in order to gain access to the project site will be surveyed prior to construction for black rail presence (BIO-3). The area of temporary habitat loss will be mitigated by habitat restoration and enhancement (WET-1). By completing the actions described under Mitigation Measures BIO-3 and WET-1 the proposed project would reduce potential impacts to the California black rail to levels that are less than significant.

Within the reaches of San Francisco Bay, the **California clapper rail** is typically found in tidal salt marshes with cordgrass-lined tidal sloughs. There are cordgrass-lined tidal marsh areas adjacent to the project site. Surveys were conducted in the 2005 nesting season to determine the presence of clapper rails in the project area. Five listening stations were placed around the project area at which passive listening and active

playback tapes of clapper rail vocalizations were broadcast from stations and trained observers listened for responses. No clapper rails were detected within 229 meters (750 feet) of the project limits. Detections were observed east of the project area with 1-2 pairs of clapper rails on the west side of Castro Creek and another two pairs on the east bank of Castro Creek (Avocet Research Associates, 2005).

Potential impacts to the California clapper rail will be avoided or minimized by implementing Mitigation Measures BIO-4 and WET-2. To avoid potential impacts to clapper rails, pre-construction surveys will be done in the areas of impact that offer potential habitat for the bird (BIO-4). Potential habitat areas that are disturbed will be replaced (WET-1). By completing the actions described under Mitigation Measures BIO-4 and WET-1 the potential impacts to the California clapper rail would be reduced to levels that are less than significant.

The **white-tailed kite** is a state fully protected species that is known to inhabit a variety of habitats including marsh wetland and grasslands that are in the vicinity of trees or dense shrubs. The nearest known occurrence of the species is approximately 1.4 kilometers (0.9 mile) east of the project site adjacent to Wildcat Creek. The project site offers no trees or large areas of shrubs in which white-tailed kites could nest or roost. The project site, consisting mostly of open water, tidal mudflats or non-native grassland, offers limited foraging area and no nesting or roosting areas.

The **California brown pelican** may use Castro Cove for foraging during high tide. The brown pelican typically builds stick nests on offshore rocks and islands mostly in southern California. Because the pelican can move and forage in a number of locations in and around Castro Cove, the temporary reduction in foraging area due to draining the area within the sheet pile enclosure would not have significant effects on the California brown pelican.

Potential impacts to the white-tailed kite and California brown pelican will be avoided or minimized by implementing Mitigation Measure BIO-5. Qualified biologists will haze any special status birds that land in the construction area. By completing the actions described under Mitigation Measure BIO-5 the potential impacts to these birds would be reduced to levels that are less than significant.

The **California least tern** has a low potential to be present at the project site. Potential use would be limited to foraging activities, as suitable breeding and roosting habitat does not occur on the project site. There are no local records of sightings for this species within the region surrounding the project site (CDFG 2005). The least tern usually forages over open waters of estuaries and lagoons that tend to support small fish that school near the water's surface. Furthermore, because this species is highly mobile, it would not be adversely impacted by the short-term construction activities in Castro Cove within the project site as it could easily move to other open waters to feed. Therefore, the project is not expected to have an impact on the California least tern.

Potential Impacts to Non-listed Sensitive Wildlife Species that May Occur in the Project Vicinity

The remaining ten animal species not discussed above are listed as federal or state species of concern, or are afforded some other protection by the state. Of these remaining species, the following are either known to occur in the project site, or have a high potential to occur there, but have not been observed. These species, listed below, are identified in Table 6.4-1 as having potential to occur at the project.

- San Pablo vole (*Microtus californicus sanpabloensis*)
- Salt marsh wandering shrew (*Sorex vagrans halicoetes*)
- Short-eared owl (*Asio flammeus*)
- Red knot (*Calidris canutus*)
- Northern harrier (*Circus cyaneus*)
- Saltmarsh yellowthroat (*Geothlypis trichas sinuosa*)
- Marbled godwit (*Limosa fedoa*)
- San Pablo song sparrow (*Melospiza melodia samuelis*)
- Long-billed curlew (*Numenius americanus*)
- Double-crested cormorant (*Phalacrocorax auritus*)

The **San Pablo vole** is a state species of special concern that occupies similar pickleweed salt marsh habitat as the salt marsh harvest mouse at low tide and higher marsh and upland grassland areas during high tide. The nearest known occurrence of the species is located approximately 0.85 kilometer (0.5 mile) east of the project area in the marsh adjacent to Wildcat Creek (CDFG 2005). Impacts to this species may include potential take of the species during removal of suitable low to high marsh habitat in the southwestern corner of Castro Cove where equipment access to the worksite is required. Mitigation will be to haze the voles away from the impact area as stated in Mitigation Measure BIO-2. Nearby habitat will be fenced off with silt fencing to prevent the voles or other small mammals from entering the construction site. Disturbed habitat will be restored and revegetated following completion of the project. By completing the actions described under Mitigation Measure BIO-2 the potential impacts to this species would be reduced to levels that are less than significant.

The **salt marsh wandering shrew** is a state species of special concern that occupies medium high salt marsh habitat or lower areas that are not regularly inundated by the tide. Habitat consists of dense cover of vegetation and driftwood, abundance of invertebrates for food, and continuous ground moisture. The nearest occurrence of this species is located approximately 2.0 kilometers (1.2 miles) northeast of the site in the San

Pablo Creek Marsh (CDFG 2005). The southwestern corner of the project area affords some marginal middle to high marsh habitat, which may sustain salt marsh wandering shrew. As described in Mitigation Measure BIO-2, a biological monitor will haze any salt marsh wandering shrews that may occur in the area. Fencing off nearby areas will prevent movement into the project area. Upon project completion, the habitat will be restored. Using these means, potential impacts to the salt marsh wandering shrew would be reduced to levels that are less than significant.

The **short-eared owl** is a state species of special concern that occupies open grassland, marsh, or wetland areas that offer dense grasses, brush, or other vegetation for roosting and cover. While the immediate project area does not offer optimal habitat, areas adjacent to the site do offer good habitat and the owl may utilize the project area for limited foraging. The nearest known occurrence of short-eared owls is approximately 0.85 kilometer (0.5 mile) east of the project area in the Wildcat Creek Marsh (CDFG 2005). Because this species is highly mobile and there is more suitable habitat in nearby areas, potential impacts to the species would be less than significant with implementation of Mitigation Measure BIO-5.

The **red knot** is a federal species of concern that forages in large tidal mudflats in the San Francisco Bay during winter months. During high tide the red knot will roost in flocks in areas such as salt ponds. There are no known occurrences of the species in the vicinity of the San Quentin quadrangle (CDFG 2005). Due to the mobility of the bird species and availability of more favorable foraging and roosting areas, potential impacts to the species would be less than significant with implementation of Mitigation Measure BIO-5.

The **northern harrier** is a state species of special concern that may inhabit and forage in grassland and wetlands. The nearest occurrence of northern harrier is located approximately 0.85 kilometer (0.5 mile) east of the project site in the marsh adjacent to Wildcat Creek where two pairs were observed (CDFG 2005). Due to the mobility of the bird species and availability of more favorable foraging and nesting areas, potential impacts to the species would be less than significant with implementation of Mitigation Measure BIO-5.

The **saltmarsh yellowthroat** is a state and federal species of concern that inhabits fresh and salt marshes, nesting from April to mid-July, with peak activity in May through June (CDFG 1990). The saltmarsh yellowthroat was observed during surveys surrounding the 76-meter (250-foot) channel (URS/Parsons 2003). The yellowthroat may utilize some of the salt marsh habitat available in the southwestern corner of Castro Cove for foraging for invertebrates or potentially nesting. Preconstruction surveys of the marsh area impacted will identify presence of the species and protect any nests with a 46-meter (150-foot) buffer (BIO-6). Marsh habitat temporarily destroyed by the construction will be restored with native vegetation following the completion of the project (WET-1). By avoiding or mitigating the effects to the species, potential impacts to the saltmarsh yellowthroat would be reduced to levels that are less than significant.

The **marbled godwit** is a federal species of concern and winter migrant to the San Francisco Bay Area. The marbled godwit forages for invertebrates in tidal mudflats

during low tide and roosts in large flocks in barren areas in upper marshland, levees, or shallow salt evaporator ponds. The species was observed roosting in the North Yard Impound Basin, adjacent to Castro Cove during the fall and winter of 2002-03 (URS/Parsons, 2003) and may forage in Castro Cove at low tide. Due to the mobility of the bird species and availability of more favorable foraging and roosting areas, the potential impacts to the marbled godwit would be reduced to levels that are less than significant with implementation of Mitigation Measure BIO-5.

The **San Pablo song sparrow** is a state and federal species of concern, which inhabits similar marsh habitats as the saltmarsh yellowthroat. The San Pablo song sparrow was observed during surveys surrounding the 250-foot Channel (URS/Parsons 2003). Following the implementation of vegetation management activities as part of interim corrective activities approved by the Water Board, this species has not been observed in the area. A small area of marginal habitat in the southwestern corner of Castro Cove must be temporarily impacted to gain access to the work area. Preconstruction surveys for nesting San Pablo song sparrow (mid March to early June breeding window) will be conducted within 46 meters (150 feet) of the impact area to identify presence of the nesting species (BIO-6). Marsh habitat temporarily destroyed by the construction will be restored with native vegetation following the completion of the project (WET-1). By avoiding or mitigating the effects to the species, potential impacts to the San Pablo song sparrow would be less than significant.

The **long-billed curlew** is a state species of special concern and winter visitant of coastal estuaries and mudflats from July to early April. The species was observed roosting in the North Yard Impound Basin, adjacent to Castro Cove during the fall and winter of 2002-03 (URS/Parsons, 2003) and may forage in Castro Cove at low tide. Due to the mobility of the bird species and availability of more favorable foraging and roosting areas, the project activities would not adversely impact the long-billed curlew. A biologist would be on site during construction activities to haze out any birds that land in the impact area as required by Mitigation Measure BIO-5. By avoiding or mitigating the effects to the species, potential impacts to the long-billed curlew would be less than significant.

The **double-crested cormorant** is a state species of special concern that forages in open shallow water such as sloughs, rivers, salt ponds, and San Pablo Bay. The cormorant typically nests in colonies on the ground, trees, or man-made structures (Goals Project 2000). The nearest known occurrence of double-crested cormorants is on the Richmond-San Rafael Bridge located approximately 2.0 kilometers (1.2 miles) southwest of the project area. While Castro Cove may provide foraging habitat for the cormorant, the mobility of the bird species and availability of more favorable foraging and roosting areas nearby reduces the potential for impacts. Hazing of birds that land in the construction site as required by Mitigation Measure BIO-5 would discourage birds from foraging in the work area and reduce the potential impact to a level that is less than significant.

Potential Impacts to Federal and State Listed Plant Species

The proposed project would not impact any plant species listed as federal and state endangered, threatened, or rare species identified in the USFWS listing of potential species to occur in or be affected by projects in the San Quentin Quadrangle or occurrences in listed by the CNDDB. All species listed under these databases occur in habitat types not present in the project area.

Potential Impacts to Non-listed Sensitive Plant Species that May Occur in the Project Vicinity

The proposed project has potential to affect three plant species of concern and two species not identified by CDFG or USFWS as sensitive species, but identified by the CNPS as 1A (plant species that are presumed extinct in California) or 1B (plant species that are rare, threatened, or endangered in California and elsewhere). These species include:

- Salt marsh owl's clover (*Castilleja ambigua* ssp. *ambigua*)
- Pt. Reyes bird's-beak (*Cordylanthus maritimus* ssp. *palustris*)
- Pacific cordgrass (*Spartina foliosa*)
- Fragrant fritillary (*Fritillaria liliacea*)
- Hairless popcorn-flower (*Plagiobothrys glaber*)

Salt marsh owl's clover or Johnny-nip is a federal species of local concern. It grows in salt marshes, coastal bluffs, and grasslands in marsh sediments consisting of well-drained coarse sediment of sands, shells, and organic debris (Goals Project 2000). Since most of the sediment of Castro Cove consists of fine and very fine sediments there is a low potential of this species occurring. Potential impacts will be addressed by Mitigation Measure BIO-7, which requires preconstruction surveys for sensitive plant species to identify any need for protection and impact avoidance. By completing the actions described under Mitigation Measures BIO-7, potential impacts to this plant species would be reduced to levels that are less than significant.

Point Reyes bird's-beak is a federal species of concern that occurs mostly in the edges of high marsh pans in open tidal area such as Tomales Bay, Bolinas Lagoon, and Limantour Estero. The nearest known occurrence is located approximately 7.0 kilometers (4.4 miles) west-northwest of the project site along San Rafael Creek at the San Rafael Bay. This occurrence is listed as possibly extirpated since the last record of the species is 1863 and records of the listing were updated in 1989 (CDFG 2005). The potential for this species to occur in the project area is very low since it is out of its known range and similar habitat conditions in terms of marine tidal influence. Potential impacts will be addressed by Mitigation Measure BIO-7, which requires preconstruction surveys for sensitive plant species to identify any need for protection and impact

avoidance. By completing the actions described under Mitigation Measures BIO-7, potential impacts to this plant species would be reduced to levels that are less than significant.

Pacific cordgrass or California cordgrass is a federal species of local concern that grows in the low salt marsh zones. The project area is known to have cordgrass in the low marsh zone. DNA testing performed on cordgrass samples taken from the project area identified the species as Pacific cordgrass. Potential impacts will be addressed by Mitigation Measure BIO-8, which encourages regrowth of the plant once remedial activities are complete. By completing the actions described under Mitigation Measure BIO-8, potential impacts to this plant species would be reduced to levels that are less than significant.

Fragrant fritillary is listed by the CNPS as a 1B species, which is a plant species that is rare, threatened, or endangered in California and elsewhere. The nearest known occurrence of this species is located 3.7 kilometers (2.3 miles) south of the project area at Point Richmond and dates back to 1900 (CDFG 2005). The area has since been developed and it is unlikely that suitable habitat remains. The fragrant fritillary typically grows in coastal prairie, coastal scrub, and Valley and foothill grasslands (often areas of serpentine soils). The possibility of this species being on the project site is very low considering the nearest occurrence dates back over 100 years and the habitat on site is not coastal prairie or coastal scrub. Potential impacts will be addressed by Mitigation Measure BIO-7, which requires preconstruction surveys for sensitive plant species to identify any need for protection and impact avoidance. By completing the actions described under Mitigation Measure BIO-7, potential impacts to this plant species would be reduced to levels that are less than significant.

Hairless popcorn-flower is listed by the CNPS as a 1A species, which is a plant species that is presumed extinct in California. The last known collection or occurrence was in 1924 in Mazanita along Richardson Bay. The plant species grows in alkaline meadows and seeps, and coastal marshes and swamps. This species has a low potential to occur in the project area given its current status, however the habitat is suitable for the species. Potential impacts will be addressed by Mitigation Measure BIO-7, which requires preconstruction surveys for sensitive plant species to identify any need for protection and impact avoidance. By completing the actions described under Mitigation Measure BIO-7, potential impacts to this plant species would be reduced to levels that are less than significant.

Mitigation for Impacts to Federal and State Listed Wildlife Species

BIO-1. Protection measures for sensitive anadromous fish (green sturgeon and steelhead [Central California Coastal ESU]). As part of the Long Term Management Strategy for dredging in San Francisco Bay, programmatic-level “environmental work windows” during which dredging can be performed without formal consultation have been designated by state and federal resource agencies (CDFG, USFWS, and NMFS). The Long Term Management Strategy imposes restrictions on dredging activities in San Francisco Bay including Castro Cove during migration of anadromous salmonid fish

from December 1 to May 30. In general, dredging can be performed within the environmental work window for salmonids during a 6-month period from June 1 through November 30. This time period also coincides with the dry season, which typically occurs from April through October. Dredging is possible outside of the environmental work windows after consultation with appropriate resource agencies including NOAA Fisheries, USFWS, and the CDFG. Because there is no established work window for green sturgeon, consultation is always required for that species.

The project proponent will complete sheetpile installation within the environmental work window or ensure that project design measures minimize the possibility that sensitive anadromous fish species are impacted. Impacts from the sheet pile installation will be avoided by vibrating most sheet piles in place or hammer driving the remaining piles only during low tide if work occurs outside the June 1 to November 30 work window. The sheet pile enclosure will be sealed during high tide to trap water within. Before sealing the enclosure, an appropriately sized net will be installed during a low tide event when the mudflats are exposed so that fish cannot enter and become entrapped within the enclosure as it refills. Once filled the final sheet piles would be installed to create the enclosure and isolate the area of hydraulic dredging from the Bay.

BIO-2. Haze salt marsh harvest mouse and other small mammals from project site prior to beginning construction. Hazing of the pickleweed habitat will be the primary method of minimizing impacts to salt marsh harvest mouse and other small mammals that might be present in the construction impact area. Hazing will be performed by a qualified biologist immediately before any habitat is disturbed. Once hazed and free of small mammals, the area will be fenced off with silt fence. The fence will prevent the mouse and other small mammals from re-entering the impact area, eliminating the possibility of take resulting from project activities.

BIO-3. Conduct preconstruction survey for California black rail. Preconstruction nesting surveys will be performed by a qualified biologist for California black rail within 76 meters (250 feet) of the impact area. Surveys will be conducted during the nesting season between February and April prior to the start of construction. Black rail nests identified will be protected by a 76-meter (250-foot) avoidance buffer marked with construction fencing. Temporary loss of foraging habitat will be fully compensated by Mitigation Measure WET-2.

BIO-4. Conduct preconstruction survey for California clapper rail. Preconstruction nesting surveys will be performed by a qualified biologist for California clapper rails within 229 meters (750 feet) of the impact area. The surveys will be conducted within the protocol survey window from January through mid-April prior to the start of construction. Clapper rail nests identified will have a 229-meter (750-foot) avoidance buffer marked with construction fencing. Temporary loss of foraging habitat will be fully mitigated by Mitigation Measure WET-2.

BIO-5. Discourage sensitive bird species from entering work area. Impacts to any sensitive foraging bird species will be avoided by having a biologist on site during construction to haze any special status species birds that enter the work area.

Mitigation for Potential Impacts to Non-listed Sensitive Wildlife Species that May Occur in the Project Vicinity

BIO-6. Conduct preconstruction survey for nesting saltmarsh common yellowthroat and San Pablo song sparrow. Prior to construction, a survey will be conducted by a qualified wildlife biologist to determine the extent and location of any breeding individuals and their nests within 46 meters (150 feet) of the project area, if any. Any discovered nest that does not yet have eggs or fledglings will be removed to discourage the pair from breeding in or adjacent to the project construction areas. If a discovered nest already has eggs or fledglings, it will be clearly marked and avoided by a 46-meter (150-foot) construction buffer.

Mitigation for Potential Impacts to Non-listed Sensitive Plant Species that May Occur in the Project Vicinity

BIO-7. Conduct preconstruction survey for sensitive plant species. Preconstruction plant surveys will be conducted by a qualified botanist to identify whether sensitive species occur in the work area of disturbance. In the unlikely event that any of the plant species occurs in the impact area, the work area containing the sensitive plant specimen or population will be fenced off by construction fencing and the project will be redesigned to avoid work activities that could damage the plant. A biologist who is knowledgeable of the plant species' life history and habitat requirements will determine the appropriate buffer zone needed to protect the plant or plants during construction. A biologist will also be present during construction to ensure that the protected areas are not entered or otherwise disturbed.

BIO-8. Restore Pacific cordgrass or California cordgrass habitat. Prior experience with revegetation of removed Pacific cordgrass has proven unsuccessful. In most instances natural regeneration of cordgrass occurs faster than by manual revegetation. To promote regeneration of cordgrass in locations occupied by cordgrass prior to project implementation the area of disturbance will be refilled with clean bay mud or other fine muds and graded to match the natural contour of the tidal marsh promoting reestablishment of the species as described in the project description. Success of the native vegetation reestablishment will be monitored by a qualified botanist or restoration biologist for five years during which adaptive management will be used to achieve a native marshland habitat. Adaptive management measures could include elimination of non-native cordgrass clones.

b. **Less than significant.** With the exception of a small amount of pickleweed, no riparian habitat or other sensitive natural community occurs in the project area. Some small area of pickleweed would be temporarily disturbed by project activities. The pickleweed is within the area enclosed by the enclosure but is not within the area to be dredged. The pickleweed would be kept moist during construction as described in the Project Description; any compacted areas would be restored as described in Mitigation Measure WET-1; and any small mammals would be hazed from the area as described in BIO-2 prior to construction. These measures would reduce the potential impacts to levels that are less than significant.

c. **Less than Significant with Mitigation.** The project would temporarily affect approximately seven acres of federally protected wetlands and 28 acres of intertidal mudflat defined as jurisdictional by Section 404 of the Clean Water Act. These areas occur in Castro Cove; none are found within the No. 1 Ox Pond. Intertidal mudflat is listed as a Special Aquatic Site in the Clean Water Act. Temporary impacts to the wetlands and mudflats in Castro Cove include temporary installation of the sheet pile enclosure and excavating contaminated bay sediment from the 20-acre site. The excavated area would be refilled by natural accretion upon completion of excavation. Implementation of Mitigation Measures WET-1 and WET-2 would reduce these potential impacts to levels that are less than significant by ensuring the restoration and re-establishment of the mudflat and wetland habitats once construction activities are complete.

WET-1. Restore salt marsh. Any excavated salt marsh that currently contains vegetation will be returned to its pre-project elevation by backfilling with clean Bay mud or other fine muds (Figure 3.0-1). Clean Bay mud or other fine muds will be obtained from one of several ongoing dredging projects in the Bay or from other available permitted Bay or upland sources. Compacted areas will be disced, as necessary to ensure compaction of less than 85 percent. Any fencing that was installed at the beginning of the project to exclude salt marsh harvest mice from this area will remain in place until after the area has been disced. The project site will be monitored annually in September for five years or until the disturbed salt marsh areas have 80 percent aerial cover by native, obligate wetland plant species. If cover is less than 30 percent at year three post construction, then active revegetation will be implemented. If active revegetation is determined to be necessary, hazing of the pickleweed habitat will be performed as described in BIO-2 prior to the start of revegetation activities in order to avoid impacts to the salt marsh harvest mouse.

WET-2. Restore mudflats. The project action would remediate contaminated sediments, which would in and of itself improve beneficial uses of Castro Cove. The 1.5-acre backfilled area will be made level to mimic the shape and contour of the pre-project conditions, thus allowing for reestablishment of native vegetation community types (Figure 3.0-1). The 1.5-acre backfilled area and mudflat area, which will refill by natural accretion, will be restored to intertidal habitat as before remediation.

d. **Less than Significant.** The proposed project is not located in nor would it interfere with any native resident or migratory fish or terrestrial wildlife corridors or impede the use of native wildlife nursery sites. There are no streams, riparian corridors, or any wildlife migration corridors located at the project site; however the restoration area in the Cove is near the mouth of Wildcat Creek, which is located approximately 1,000 feet to the north and east. Potential impacts to migratory fish that may use Wildcat Creek are discussed above and would be avoided by Mitigation Measure BIO-1. The small wetlands area at the project site could provide habitat for wintering populations of migratory waterfowl of the Pacific Flyway and migratory shorebirds; however, the size of temporary impact area is a small fraction of the available foraging area located in adjacent, more suitable foraging and resting habitats. Upon completion of the remediation and restoration, Castro Cove would offer foraging and refuge for migratory

bird species. Therefore, the potential impact to fish or other wildlife migration corridors would be less than significant.

e. **No Impact.** No trees are located in the restoration area, which is a tidal mudflat or in the upland areas that would be used for project activities.

f. **No Impact.** The proposed project site is not located in an area that has an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

Cumulative Impacts:

Since the project would remove contaminants from Castro Cove and cap the oily sediments in the No. 1 Ox Pond it is expected to have an overall beneficial impact to biological resources. The site would be restored when the project is complete so no long-term cumulative impacts to wildlife would occur. Temporary impacts to wildlife could occur during remediation activities in Castro Cove but these would be fully mitigated by the mitigation measures included as part of the project or the mitigation measures recommended in this IS and proposed mitigated Negative Declaration, which the project proponent has also agreed to implement. With implementation of the mitigation measures, no cumulative effects to biological resources would result from this project.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Use vibratory hammer to install sheetpiles.** Use of a vibratory hammer would avoid potential impacts to fish during construction to levels that are less than significant.
- **Net the opening of the sheet pile enclosure before closing.** Use of a net to prevent fish from entering the sheet pile enclosure before closing it off from the Bay would avoid potential impacts to fish during construction to levels that are less than significant.
- **Protection of marsh areas within the sheet pile enclosure.** Two small areas of marsh vegetation would be protected during remediation by placing silt curtains around the areas to protect the plants during dredging. Maintenance of these areas during construction would avoid the potential impact to marsh vegetation to a level that is less than significant.
- **Monitor health of marsh vegetation and natural restoration.** The health of marsh vegetation would be monitored during and after construction. The affected areas would be restored by natural regrowth. A contingency plan for replanting would be implemented should natural regrowth be inadequate.

Mitigation Measures Required by this Environmental Document:

- **BIO-1: Protection measures for green sturgeon and steelhead (Central California Coastal ESU).** Either working within the resource agencies' June 1 to November 30 work window or implementing the project-specific design measures would reduce potential impacts to fish during construction to levels that are less than significant.
- **BIO-2: Haze salt marsh harvest mouse and other small mammals from project site prior to beginning construction.** Removal of any small mammals from the construction area prior to beginning work and preventing their re-entry would reduce potential impacts to the salt marsh harvest mouse and other small mammals to levels that are less than significant.
- **BIO-3: Conduct preconstruction survey for California black rail.** Surveying for rails and establishing buffer zones around their nests, if necessary, would reduce potential impacts to the California black rail to levels that are less than significant.
- **BIO-4: Conduct preconstruction survey for California clapper rail.** Surveying for rails and establishing buffer zones around their nests, if necessary, would reduce potential impacts to the California clapper rail to levels that are less than significant.
- **BIO-5: Discourage sensitive bird species from entering work area.** Discouraging sensitive bird species, such as the white-tailed kite and California brown pelican, from using the construction site would reduce potential impacts to these species to levels that are less than significant.
- **BIO-6: Conduct preconstruction survey for nesting saltmarsh common yellowthroat and San Pablo song sparrow.** Surveying for these species and establishing buffer zones around their nests, if necessary, would reduce potential impacts to these birds to levels that are less than significant.
- **BIO-7: Conduct preconstruction survey for sensitive plant species.** Surveying for sensitive plant species and establishing buffer zones around specimens or populations, if necessary, would reduce potential impacts to these plants to levels that are less than significant.
- **BIO-8: Restore Pacific cordgrass or California cordgrass habitat.** Backfilling of excavated areas and monitoring and replanting, if necessary, of cordgrass areas would reduce potential impacts to this habitat type to levels that are less than significant.
- **WET-1: Restore salt marsh.** Returning the marsh to excavation elevations by backfilling and discing of compacted areas would reduce potential impacts to salt marshes to levels that are less than significant.

- **WET-2: Restore mudflats.** Restoration of mudflats would improve habitat quality and reduce potential impacts to levels that are less than significant.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
FEDERAL- AND STATE-LISTED SPECIES					
Plants					
<i>Calochortus tiburonensis</i>	Tiburon mariposa lily	T/T	1B	Valley and foothill grassland (serpentine); blooms: Mar – Jun; elevation range: 50 – 150 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Castilleja affinis ssp. neglecta</i>	Tiburon paintbrush	E/T	1B	Valley and foothill grassland (serpentine); blooms: Apr – Jun; elevation range: 60 – 400 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Hesperolinon congestum</i>	Marin dwarf-flax (=western flax)	T/T	1B	Chaparral and valley and foothill grassland/serpentine; blooms Apr – Jul; elevation range: 5 – 370 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Streptanthus niger</i>	Tiburon jewelflower	E/E	1B	Valley and foothill grassland (serpentine); Blooms: May – Jun; elevation range: 30 – 150 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Pentachaeta bellidiflora</i>	White-rayed pentachaete	E/E	1B	Valley and foothill grassland; often serpentine; Mar – May; elevation range: 35 – 620 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Trifolium amoenum</i>	Showy Indian clover	E/None	1B	Coastal bluff scrub, valley and foothill grassland (sometimes serpentine); blooms: Apr – Jun; elevation range: 5 – 415 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
Fish					
<i>Acipenser medirostris</i>	Green sturgeon	P/SSC	--	Pacific Ocean; anadromous-migrating in the winter to coastal streams including the Sacramento River to spawn in the following summer. Forages by sifting muddy bottom sediments for prey.	Potential to occur; however less likely to be found in a shallow cove, more likely in open water.
<i>Eucyclogobius newberryi</i>	Tidewater goby	E/SSC	--	Occurs in brackish water habitats or shallow lagoons and lower stream reaches along the California coast.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Hypomesus transpacificus</i>	Delta smelt	T/None	--	Euryhaline species, but for a large part of its life span, it is associated with the freshwater edge of the mixing zone (saltwater-freshwater interface). Spawning habitats are side channels and sloughs in the middle reaches of the Delta. Spawn in shallow freshwater from December through July. Pelagic feeder. Occasionally migrate to San Pablo Bay and the Carquinez Strait during seasonal movements when water flows through the Delta are very high and the mixing zone moves into the east end San Pablo Bay.	Not likely to occur. Castro Cove is on the west end of San Pablo Bay and the project area does not support suitable brackish or freshwater spawning habitat.
<i>Oncorhynchus kisutch</i>	Central California coast Coho salmon	E/None	--	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	Not likely to occur; project area does not have any rivers or streams suitable to support this species.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Oncorhynchus kisutch</i>	Critical habitat, Coho salmon – central CA coast	Critical habitat/ None	--	N/A	No potential to occur. No portion of the bay or rivers in the project area support Coho salmon habitat.
<i>Oncorhynchus mykiss</i>	Central California coastal steelhead	T/None	--	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	Potential to occur near Wildcat Creek; however barriers on the creek prevent runs and the project area is separated from the stream by a 610 m. marsh plain spit.
<i>Oncorhynchus mykiss</i>	Central Valley steelhead	T/None	--	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	Not likely to occur; project area does not have any rivers or streams suitable to support this species.
<i>Oncorhynchus tshawytscha</i>	Central Valley spring-run Chinook salmon	T/None	--	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	Not likely to occur; project area does not have any rivers or streams suitable to support this species.
<i>Oncorhynchus tshawytscha</i>	Proposed critical habitat, Central Valley spring-run Chinook salmon	Proposed critical habitat/ None	--	N/A	No potential to occur. No portion of the bay or rivers in the project area support Chinook salmon habitat.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Oncorhynchus tshawytscha</i>	Central Valley fall/late fall-run Chinook salmon	C/None	--	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	Not likely to occur; project area does not have any rivers or streams suitable to support this species.
<i>Oncorhynchus tshawytscha</i>	Candidate listing for Critical habitat, Central Valley fall/late fall-run Chinook salmon	Candidate listing for Critical habitat/ None	--	N/A	No potential to occur. No portion of the bay or rivers in the project area support Chinook salmon habitat.
<i>Oncorhynchus tshawytscha</i>	Sacramento River winter-run Chinook salmon	E/None	--	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	Not likely to occur; project area does not have any rivers or streams suitable to support this species.
<i>Oncorhynchus tshawytscha</i>	Critical habitat, winter-run Chinook salmon	Critical habitat/ None	--	N/A	No potential to occur. No portion of the bay or rivers in the project area support Chinook salmon habitat.
Mammals					
<i>Reithrodontomys raviventris</i>	Salt marsh harvest mouse	E/E	--	Only found in the saline emergent wetlands of the San Francisco Bay and its tributaries. Pickleweed is the primary habitat.	Potential to occur. Pickleweed is the dominant mid to high marsh plant species.
Birds					

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Charadrius alexandrius nivosus</i>	Western snowy plover	T/SSC	--	Habitats used by nesting and non-nesting birds include sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars. Nests in sandy substrate and forages in sandy marine and estuarine bodies.	Not likely to occur due to marginal habitat characteristics.
<i>Elanus leucurus</i>	White-tailed kite	None/FP	--	Nests in dense topped trees in the vicinity of marshes and grasslands.	Potential to occur. Known occurrence 1.2 km east of the project area.
<i>Empidonax traillii brewsteri</i>	Little willow flycatcher	None/E	--	Nests in willow thickets of isolated montane meadows and riparian systems of northern and central California; winters in Central and South America. It ranges from the central California coast north to Vancouver Island.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Falco peregrinus anatum</i>	American peregrine falcon	D/FP	--	Nests on protected cliffs near large waterbodies where prey is abundant; uncommonly found in the Central Valley as a winter resident. Nests from central Alaska across north-central Canada to central Mexico, winters to South America.	Not likely to occur. Appropriate nesting habitat is not present in the project area, however may frequent the area for foraging.
<i>Haliaeetus leucocephalus</i>	Bald eagle	T/None	--	Winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands on protected cliffs and ledges. Also nests on bridges and buildings in urban areas. Nests are normally built in the upper canopy of large trees, usually conifers.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Laterallus jamaicensis coturniculus</i>	California black rail	SC/FP	--	Mainly inhabits salt marshes bordering large bays. It inhabits saltwater, brackish, and freshwater marshes. Nests and forages in dense pickleweed.	Potential to occur. Nearest occurrence is 145 m. east of the project area.
<i>Pelecanus occidentalis californicus</i>	California brown pelican	E/E	--	Nests in islands off the coast of California and forages in open bay and ocean waters.	Potential to occur. May use Castro Cove for foraging.
<i>Rallus longirostris obsoletus</i>	California clapper rail	E/E	--	Saltwater and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay. Nests and forages in dense pickleweed.	Potential to occur. Nearest occurrence is 145 m east of the project area.
<i>Riparia riparia</i>	Bank swallow	None/T	--	Riparian, lucustrine, and coastal lowland habitats with vertical banks of fine textured or sandy soils to burrow nesting holes.	No potential to occur. Appropriate habitat characteristics are not present in the project area.
<i>Sterna antillarum browni</i>	California least tern	E/E	--	Nests and forages in sandy beaches and coastal wetlands. Colonial breeder on sparsely vegetated, flat substrates: sandy beaches, alkali flats, landfills, or paved areas. Nests along the coast from the San Francisco Bay south to northern Baja California.	Potential to occur.
Amphibians					

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Rana aurora draytonii</i>	California red-legged frog	T/SSC	--	Dense, shrubby riparian vegetation associated with deep (≥ 0.7 m), still or slow-moving water. Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development, must have access to aestivation habitat.	Not likely to occur. No freshwater habitat is in the project area.
<i>Rana aurora draytonii</i>	Proposed critical habitat, California red-legged frog	Proposed critical habitat/ None	--	N/A	No potential to occur. Habitat characteristics are not present in the project area.
SPECIES OF CONCERN					
Plants					
<i>Castilleja ambigua</i> ssp. <i>ambigua</i>	Salt marsh owl's clover (=johnny-nip)	SLC/None	--	Coastal bluffs, salt marshes, grassland; elevation range <150 m.	Potential to occur.
<i>Cirsium andrewsii</i>	Franciscan thistle	SC/None	1B	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub/ mesic, sometimes serpentinite; blooms: Mar-Jul; elevation range: 0 – 150 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Pt. Reyes bird's-beak	SC/none	1B	Coastal salt marshes and swamps.	Potential to occur but it is unlikely due to marginal habitat characteristics. The project area surrounded by developed and disturbed areas.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	SLC/None	--	Chaparral, coastal prairie, valley and foothill grassland/serpentine; blooms: Jun-Sep; elevation range: 10 – 500 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Spartina foliosa</i>	Pacific cordgrass (=California cordgrass)	SLC/None	--	Salt marshes, mudflats, shores; elevation range: < 10 m.	Present on site.
Fish					
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	SC/SSC	--	Backwater sloughs of major rivers.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Spirinchus thaleichthys</i>	Longfin smelt	SC/SSC	--	Moderately saline water, bays and estuaries.	Not likely to occur. Lack of freshwater/low salinity water.
Mammals					
<i>Corynorhinus</i> (=Plecotus) <i>townsendii townsendii</i>	Pacific western big-eared bat	SC/None	--	Roosting sites include caves and cave- type dwellings such as tunnels, mines, and bridges. Feeds primarily on moth species in a variety of habitats except subalpine and alpine communities. Tend to forage within 2.4 km (1.5 mi) of roosting areas.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Eumops perotis californicus</i>	Greater western mastiff-bat	SC/SSC	--	Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Microtus californicus sanpabloensis</i>	San Pablo vole	None/SSC	--	Saline emergent wetlands of the San Francisco Bay and its tributaries.	Potential to occur. Nearest occurrence is located approximately 0.85 km east of the project area.
<i>Myotis evotis</i>	Long-eared myotis bat	SC/None	--	Widespread in California, avoids the arid Central Valley and hot deserts. Predominantly found in coniferous forest types ranging in elevations 2,133 to 2,591 m where they roost in tree crevices, exfoliating barks and snags.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Myotis thysanodes</i>	Fringed myotis bat	SC/None	--	Widespread in California, occurring in all but the Central Valley and Colorado and Mojave deserts; generally at 1,300-2,200 m.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Myotis volans</i>	Long-legged myotis bat	SC/None	--	Coast ranges, Cascade/Sierra ranges, Mojave Desert mountains, common above 1,200 m. Not present in the Central Valley. Roost in tree crevices, exfoliating barks and snags.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Myotis yumanensis</i>	Yuma myotis bat	SC/None	--	Forests and woodlands with sources of water over which to feed, roosts in buildings, mines, caves, crevices, occasionally under bridges.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat	SC/SSC	--	Forest riparian communities of moderate canopy and moderate to dense understory of favorable stick nest building materials.	No potential to occur; project area does not have any rivers or streams suitable to support this species.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Sorex vagrans halicoetes</i>	Salt marsh wandering shrew	SC/SSC	--	Tidal marshes that provide dense cover, abundant food (primarily invertebrates), suitable nesting sites (dense canopy of pickleweed and Spartina duff), and fairly continuous ground moisture (offered by driftwood and debris).	Potential to occur. The project area has a remnant pickleweed patch and Spartina vegetation. Nearest occurrence is 2.0 km northeast of the project area.
<i>Zapus trinotatus orarius</i>	Point Reyes jumping mouse	SC/SSC	--	Bunch grass marshes on the uplands that are safe from continuous inundation. Know range is in the Point Reyes area.	Not likely to occur. Very limited poor habitat present; outside known range.
Birds					
<i>Agelaius tricolor</i>	Tricolored blackbird	SC/SSC	--	Nests in emergent plants or thickets adjacent to freshwater source.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Amphispiza belli belli</i>	Bell's sage sparrow	SC/SSC	--	Nests within dense chaparral and sage scrub habitat, winters in more open habitat; known from Shasta, San Diego, El Dorado, and Mariposa Counties.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Asio flammeus</i>	Short-eared owl	None/SSC	--	Open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Requires dense vegetation; tall grasses, brush, ditches, and wetlands are used for resting and roosting cover	Potential to occur, however habitat is limited in the immediate project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Athene cunicularia</i>	Burrowing owl	SC/SSC	--	Open, annual or perennial grasslands, deserts, or scrublands characterized by low-growing vegetation. Nests in burrows of ground squirrels in grasslands.	Not likely to occur. The project area does not have suitable foraging grassland habitat; however riprap may provide poor quality nesting area.
<i>Buteo regalis</i>	Ferruginous hawk	SC/SSC	--	Nests in prairies from Oregon to Canada; winters in grassland or desert habitats throughout California.	Not likely to occur. The project area does not have suitable grassland habitat; however species may infrequently forage in the area.
<i>Calidris canutus</i>	Red knot	SC/None	--	Coastal estuarine sand or mudflats, less often on sandy beaches of the outer coast.	Potential to occur.
<i>Calypte costae</i>	Costa's hummingbird	SC/SSC	--	Inhabits desert wash, edges of desert riparian and valley foothill riparian, coastal scrub, desert scrub, desert succulent shrub, lower-elevation chaparral, and palm oasis. Ranges from south-central California to Mexico. Winters from southern California to Mexico. Feeds primarily on nectar, but will also take small insects and spiders.	Not likely to occur. Appropriate habitat characteristics are not present in the project area; however known to frequent various habitats throughout the state.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Chaetura vauxi</i>	Vaux's swift	SC/SSC	--	Prefers redwood and Douglas-fir habitats with nest-sites in large hollow trees and snags, especially tall, burned-out stubs. Forages over a variety of terrains and habitats on flying insects. Wintering grounds in Mexico and Central America, and occasionally in coastal lowlands of southern California.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Circus cyaneus</i>	Northern harrier	None/SSC	--	Annual grassland up to higher elevation lodgepole pine and alpine meadow habitats. Nests on ground in wetland, shrubby, or grassy areas.	Potential to occur. Known occurrences within 145 m of the project area.
<i>Cypseloides niger</i>	Black swift	SC/SSC	--	Nests in moist crevice or cave on coastal cliffs or behind or adjacent to waterfalls in deep canyons.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Geothlypis trichas sinuosa</i>	Saltmarsh yellowthroat	SC/SSC	--	Breeds in low undergrowth by water, in sloughs, on islands, and by creek and swamp edges. Resident of the San Francisco Bay Region.	Potential to occur. Observed near the 250-foot channel adjacent to the project site.
<i>Histrionicus histrionicus</i>	Harlequin duck	SC/SSC	--	October to early April in marine waters along rocky coast from San Luis Obispo Co. north, with stragglers remaining through the summer. Nests May to August on large, turbulent sierran rivers from Madera to Tuolumne counties.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Lanius ludovicianus</i>	Loggerhead shrike	SC/SSC	--	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest densities known from open-canopied hardwoods and riparian habitats, but also occurs in open croplands. Forages on large insects, small birds, mammals, amphibians, reptiles, fish, carrion, and invertebrates.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Limosa fedoa</i>	Marbled godwit	SC/None	--	Winter visitant of estuarine habitats throughout the state. Forages in mudflats and sandy areas with shallow water. Requires undisturbed emergent wetland, fields, or salt ponds for roosting during high tide.	Potential to occur. Observed roosting in the North Yard Impound Basin, adjacent to Castro Cove.
<i>Melanerpes lewis</i>	Lewis' woodpecker	SC/None	--	Suitable habitat includes open deciduous and conifer habitats with brushy understory, with scattered snags and live trees for nesting and perching. Forages primarily on insects in spring and summer, fruits, acorns, nuts, and seeds other times of year.	No potential to occur. Appropriate habitat characteristics are not present in the project area.
<i>Melospiza melodia samuelis</i>	San Pablo song sparrow	SC/SSC	--	Breeds in low shrubby growth and thickets in a variety of habitats, but most often in moist and swampy places. Resident of salt marshes bordering San Pablo Bay. Inhabits marshes dominated by <i>Salicornia</i> sp. Nests low on <i>Grindelia</i> bushes and in <i>Salicornia</i> .	Potential to occur. Observed near the 250-foot channel adjacent to the project site.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Numenius americanus</i>	Long-billed curlew	None/SSC	--	Nests near water in prairies and grassy meadows.	Potential to occur. May forage in area. Appropriate breeding habitat characteristics are not present in the project area.
<i>Phalacrocorax auritus</i>	Double-crested cormorant	None/SSC	--	Coastal salt water, estuarine, inland lakes. Nests on coastal cliffs and offshore islands along the coast. Forages in open water.	Potential to occur for foraging, however no nesting habitat is in the project area. Nearest occurrence is located 2.0 km south of the project area on the San Rafael Bridge.
<i>Rynchops niger</i>	Black skimmer	None/SSC	--	Nests in coastal beaches or sandbars. Forages in shallow water.	Not likely to occur. Range is mostly southern CA coast and Salton Sea. Appropriate nesting habitat characteristics are not present in the project area.
<i>Selasphorus rufus</i>	Rufous hummingbird	SC/None	--	Breeds north of California in coniferous forests. Winters in south to south central Mexico. Uses valley foothill hardwood, valley foothill hardwood conifer, riparian, and various chaparral habitats with nectar-producing flowers during migration. Besides nectar, also feeds on insects, spiders, and tree sap.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
<i>Selasphorus sasin</i>	Allen's hummingbird	SC/None	--	Coastal scrub, valley foothill hardwood, valley foothill riparian, closed-cone pine-cypress, redwood, and urban habitats. Builds nests in trees, shrubs, vines, and ferns.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
Reptiles					
<i>Emys marmorata</i>	Western pond turtle	SC/SSC	--	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs basking sites and suitable upland habitat for egg-laying.	Not likely to occur. Appropriate habitat characteristics are not present in the project area. May utilize nearby riparian habitat in Wildcat Creek.
<i>Phrynosoma coronatum frontale</i>	California horned lizard	SC/SSC	--	Valley-foothill hardwood, conifer, and riparian habitats, as well as pine-cypress, juniper, and annual grass habitats, bask on low boulders or rocks, burrow into soil or under objects for cover and hibernation.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
Amphibians					
<i>Rana aurora aurora</i>	Northern red-legged frog	SC/SSC	--	Breeds in pools with emergent vegetation; typically absent in pools where predatory fish are present; require adequate hibernacula such as small mammal burrows and moist leaf litter.	Not likely to occur. Appropriate freshwater habitat characteristics are not present in the project area. Out of known range.
<i>Rana boylei</i>	Foothill yellow-legged frog	SC/SSC	--	Partly shaded, shallow streams and riffles with rocky substrate in a variety of habitats.	Not likely to occur. Appropriate freshwater habitat characteristics are not present in the project area.

**Table 6.4-1. Special Status Species Known To Occur
in the Vicinity of Castro Cove**

Scientific Name	Common Name	Federal/ State Status	CNPS	Preferred Habitat	Potential To Occur in the Project Area
Invertebrates					
<i>Adela oplerella</i>	Opler's longhorn moth	SC/None	--	Serpentine soils, open grasslands, sandy soils; host plant is cream cups (<i>Platystemon californicus</i>).	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle	SC/None	--	Freshwater habitats, restricted to the San Francisco Bay Area.	No potential to occur. No freshwater habitat in the project area.
<i>Incisalia mossii marinensis</i>	Marin elfin butterfly	SC/None	--	Coastal scrub with cliffs or rock outcrops; host plant is stonecrop (<i>Sedum spathulifolium</i>).	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
<i>Microcina tiburona</i>	Tiburon microblind harvestman	SC/None	--	Open grassland habitats, restricted to the San Francisco Bay Area.	Not likely to occur. Appropriate habitat characteristics are not present in the project area.
NON-LISTED SPECIES					
Plants					
<i>Fritillaria liliacea</i>	Fragrant fritillary	None/None	1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentinite; blooms: Feb – Apr; elevation range: 3 – 410 m.	Potential to occur. Nearest occurrence is located approximately 3.65 km south of the project area.
<i>Plagiobothrys glaber</i>	Hairless popcorn-flower	None/None	1A	Meadows and seeps (alkaline), marshes and swamps (coastal salt); blooms: Mar – May; Elevation range: 15 – 180 m.	Potential to occur.

E – Endangered under the Federal or State Endangered Species Act

T – Threatened under the Federal or State Endangered Species Act

FP – Fully Protected under the State Endangered Species Act

PE – Proposed Endangered under the Federal or State Endangered Species Act

PT – Proposed Threatened under the Federal or State Endangered Species Act

C – Candidate for listing status

SC – Federal species of concern

SSC – California species of special concern

California Native Plant Society (CNPS)

1A – Plant species that are presumed extinct in California

1B – Plant species that are rare, threatened, or endangered in California and elsewhere

2 – Plant species that are rare, threatened, or endangered in California but more common elsewhere

3 – Plant species about which we need more information (a review list)

4 – Plant species of limited distribution (a watch list).

Source: CNDDB and USFWS species list for the San Quentin 7.5-minute USGS quadrangle.

6.5 CULTURAL RESOURCES

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?				✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?				✓
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				✓
d) Disturb any human remains, including those interred outside of formal cemeteries?				✓

Project Activities with the Potential to Create Impacts to Cultural Resources:

- Installation of sheet piles
- Hydraulic dredging of sediments
- Stabilization and capping of the No. 1 Ox Pond

Setting:

The project site is located within Castro Cove and at the No. 1 Ox Pond. Castro Cove is an embayment of San Pablo Bay that has historically contained tidal mudflats or wetlands. The No. 1 Ox Pond was formerly part of the Refinery's wastewater treatment system. The upland area adjacent to the project site is occupied by the Chevron Refinery. While portions of the Refinery have buildings dating from the early twentieth century, the area that would be used for stabilization and related project activities contains no buildings.

Discussion:

a – d. **No Impact.** The project site does not include any identified cultural, historical, or paleontological resources. The restoration area is composed of recent marshland and mudflat deposits laid down within the last 100 years. There are no reported shipwrecks at the project site. The No. 1 Ox Pond was used as part of the Refinery's wastewater treatment system until the 1980s. Other nearby upland areas that would be used for project activities are constructed of fill, are paved or have been previously graded. No evidence of cultural, historical, or paleontological resources within the Cove and within the restoration area were encountered during deep and shallow sample collection for the ecological risk assessment or other investigations. Thus, the project would have no impact on cultural, historical, or paleontological resources.

Cumulative Impacts:

The project would not remove or otherwise affect any historically significant structures or other resources and thus the project would not contribute to a significant cumulative impact on cultural resources.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.6 GEOLOGY AND SOILS

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			✓	
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				✓
ii) Strong seismic ground shaking?			✓	
iii) Seismic-related ground failure, including liquefaction?			✓	
iv) Landslides?				✓
b) Result in substantial soil erosion or the loss of topsoil?				✓
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?			✓	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				✓
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓

Project Activities with the Potential to Create Geologic or Soils Impacts:

- Installation of sheet piles
- Hydraulic dredging of sediments
- Stabilization and capping of the No. 1 Ox Pond

Setting:

Regional Geology

The project site is located in the Coast Range geomorphic province of California, and on the margin of the San Francisco Bay. The Coast Range geomorphic province is characterized by northwesterly-southeasterly trending ridges and valleys. Within the San Francisco Bay Area, tectonic forces on the edge of the North American Plate have resulted in gradual subsidence of the bedrock under San Francisco and San Pablo Bays. This subsidence lowered the elevation of the valleys, allowing flooding of the historic

and pre-historic bays, and deposition of thick layers of estuarine soils. The project site is located in one such basin between the San Pablo Hills and the Berkeley Hills, which has been filled with a deep sequence of Quaternary soils. Depth to bedrock under the project site is not well known, but was found at a depth of 369 feet in a well (GW-109B) located in the northeastern corner of the refinery near the Reclamation Yard (URS, 2001a).

Seismicity

The project area is located in a region of high seismic hazard. The northern portion of the Hayward fault is approximately 3.3 miles from the project site at its nearest point (CDMG, 1982). The San Andreas fault is located 15 miles west of Richmond. These faults are capable of generating earthquakes of magnitudes up to 7.25 and 7.9, respectively.

Both faults have historically generated large earthquakes. The most recent damaging earthquakes on the San Andreas Fault were the 1906 San Francisco earthquake, which caused extensive damage in the City of San Francisco, and the 1989 Loma Prieta earthquake. The most recent damaging earthquake on the Hayward Fault was the magnitude 7.0 earthquake in 1868 on the southern portion of the fault. Paleoseismic studies suggest a large earthquake occurred on the northern portion of the Hayward Fault sometime between 1640 and 1776. In 2003, the Working Group on California Earthquake Probabilities (WGCEP) predicted a 62 percent probability of a magnitude 6.7 or greater earthquake in the Bay Area in the next 30 years.

Site Subsurface Conditions

A recent geotechnical study examined the subsurface conditions in the Cove and at nearby upland areas that could be used for project activities (Parsons 2005). Starting at the ground surface, the Castro Cove is underlain by a thick layer of Recent Bay Mud, a very soft to medium stiff, highly compressible clayey estuarine deposit formed within the present bay in the past 10,000 years. The Recent Bay Mud deposits are 35 to 60 feet deep beneath the Cove and on average 25 feet deep beneath the No. 1 Ox Pond. The Recent Bay Mud has low permeability and low to moderate shear strength that increases with depth. Results from sampling activities indicate that the Cove sediments have a water content ranging from approximately 50 to 125 percent water by dry weight of solids.

The Recent Bay Mud deposits are underlain by Old Estuarine deposits (also referred to as Old Bay Mud) of unknown thickness with some interfingering of alluvial deposits. In upland areas adjacent to the Cove subsurface soils consist of successive layers of fill, Recent Bay Mud, and Old Estuarine and Alluvial Deposits. Based on sampling at one location the fill layer appears to be about seven feet deep. The No. 1 Ox Pond contains oily sediments with an average depth of approximately 5.5 feet overlain by six inches to one foot of clayey soil. The dike road and roads separating the Passes within the No. 1 Ox Pond consist of various materials including fill, Dredged Bay Mud, Recent Bay Mud and Old Estuarine and Alluvial Deposits.

Discussion:

a. **Less Than Significant.** The project site is not within an Alquist-Priolo Special Studies Zone. The closest known active fault is the Hayward fault, which is approximately three miles from the project site. The proposed project would not expose people to risks involving a rupture of a known earthquake fault, seismic shaking, ground failure, liquefaction, landslides, expanding soil, or any other form of unstable ground greater than that of any other activities in an area of known seismic risk.

b. **No Impact.** The project area consists of a nearly level, tidal mudflat and nearby level upland areas. Project activities would not cause soil erosion or the loss of topsoil from these areas

c. **Less than Significant.** Liquefaction occurs when loose granular sediments lose strength due to vibration and are transformed into a temporary liquid state. Sediments in the Cove are comprised of saturated, fine-grained clay and silty-clay. The No. 1 Ox Pond contains oily sediments and clayey soil underlain by the same type of sediments found in the Cove. No evidence of loose granular sediments has been observed at either location. The project would not increase the long-term risks to people or structures from liquefaction.

Subsidence is a long-term, slow settlement of the ground surface. The project area is not prone to subsidence and no impact would occur from project-related activities.

The restoration area is a tidal mudflat with a very shallow slope (approximately 1 foot vertical per 300 to 500 feet horizontal). The No. 1 Ox Pond and surrounding upland work areas are also flat and not prone to landslides. The shallow slopes created as part of the hydraulic dredging of contaminated sediments would be covered with a 6-inch sand layer to prevent erosion. Therefore, the proposed project would not cause a landslide or erosion that could result in a significant impact to people, structures, or the environment.

d. **No Impact.** The proposed project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994).

e. **No Impact.** The proposed project would not construct septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. The project would not create new wastewater demands on Chevron's property and would not result in the need to create new wastewater handling systems.

Cumulative Impacts:

The project would be implemented in a relatively flat area with limited potential geologic hazards. Potential impacts would be temporary and localized and would not have cumulative impacts when considered in combination with other projects. The ground surface would be restored after excavation by natural accretion. No long-term geologic impacts would occur and thus the project would not contribute to a cumulative adverse impact to geology and soils.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None

Mitigation Measures Required by this Environmental Document: None are needed

6.7 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			✓	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				✓
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			✓	
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				✓

Project Activities with the Potential to Create Hazards or Hazardous Materials Impacts:

- Hydraulic dredging of sediments
- Stabilization and capping of the No. 1 Ox Pond

Setting:

The project site does not utilize or store hazardous materials nor generate hazardous waste. Excavated Cove sediments would be considered “waste” from a regulatory standpoint and have been classified as contaminated but are not hazardous under California Title 22 regulations. Evaluation of analytical data from 48 historical sediment

samples from 23 sampling locations in Castro Cove show that sediment removed from Castro Cove as part of the remedial action is not a hazardous waste under State or Federal regulations.

The No. 1 Ox Pond was formerly part of the Refinery's wastewater treatment system and contains oily sediments generated during its former use. These materials are overlain by six inches to one foot of clayey soil and underlain by low permeability Bay Mud. The facility is subject to Water Board Order No. 00-043, which requires corrective actions to address the oily sediments. The corrective action for the No. 1 Ox Pond includes drainage improvements and mitigation of potential hazards for ecological receptors by constructing physical barriers to exposure and by managing vegetation to make the site less attractive to wildlife. The Water Board approved the interim corrective action on June 1, 2004 and the corrective actions have been implemented.

Discussion:

a. – b. **Less than Significant.** The proposed project would involve the handling and transport of sediments containing PAHs and mercury and the stabilization and capping of oily sediments within the No. 1 Ox Pond at the adjacent Chevron Richmond Refinery. The impacted sediment would be removed from the restoration area using a hydraulic dredge. The sediment would be conveyed via a pipeline to the No. 1 Ox Pond where it would be spread as an approximately two-foot thick layer over approximately 66 acres. The sediments from the Cove would be stabilized with cement, lime, fly ash, bottom ash or cement kiln dust along with the upper four to five feet of materials in the No. 1 Ox Pond to form a cap over the remaining oily sediments in the No. 1 Ox Pond. The stabilized materials would be covered with a layer of clean soil and planted with grass. The cap of clean soil and stabilized material would prevent human or animal contact with the underlying oily sediments. The cap of stabilized material, underlying layer of Bay Mud, upward hydraulic gradient, and Refinery's groundwater protection system would prevent the movement of the oily sediments in the environment. Thus, the potential impact would be less than significant.

The proposed project would not require bulk storage of flammable or combustible liquids or gases, corrosive, caustic, or otherwise reactive or toxic chemical substances. Fuels and lubricants would be used by construction equipment and a stabilizing agent would be used to stabilize the upper three to four feet of oily sediments in the No. 1 Ox Pond. Although these are commonly used materials they have some hazardous properties—fuels are flammable, for example. To protect people and the environment from these hazards they would be transported, stored and handled in accordance with applicable laws and regulations. The project would also comply with the Refinery's hazardous materials policies and programs. Thus, the potential impact would be less than significant.

Project workers and supervisors would comply with applicable Occupational Safety and Health Administration (OSHA) training requirements for site clean-up personnel, Chevron's 8-hour safety training class and general refinery safety instruction provided by the Bay Area Training Corporation. In addition, a site-specific health and safety plan would be prepared for this project in accordance with Title 8 California Code of

Regulations Section 5192 and Title 29, Section 1910.120 of the federal Code of Regulations, which govern site clean-ups. Site workers would receive training in the contents of the plan. Decontamination of equipment and personnel in contact with the excavated sediment would be required. Spoil and liquids generated by the decontamination process would be properly contained on the project site, analyzed for selected chemicals, and disposed in accordance with federal, state, and local regulations.

A truck safety program would be developed prior to the start of the project. This program would give a detailed list of required safety training and procedures for each truck subcontractor. The team would also provide a contact list to be given to each truck subcontractor in the event of a breakdown or accident. An Action Plan for Material Spill would be required by the contractor prior to notice to proceed.

c. **No Impact.** No schools are located within one mile of the project site.

d. **No Impact.** The site is not listed pursuant to Government Code Section 65962.5. This restoration area is listed by the Water Board as a “toxic hot spot” in the Bay Area pursuant to Section 13304 of the California Water Code. As described in the project description, the sediments have been found to be contaminated, but not hazardous. The No. 1 Ox Pond is subject to Water Board Order 00-043 and an interim corrective action is currently in place.

e. – f. **No Impact.** The proposed project site is not located within an airport land use plan, is not located within two miles of a public airport or a public use airport, and is not near a private air strip. Therefore, the project would not result in a safety hazard for people residing or working in the project area.

g. **Less than Significant.** The actions proposed under this project would not impair implementation of, or physically interfere with, an adopted local agency emergency evacuation or response plan because they would not obstruct emergency access, create detours, or otherwise alter access to or block roadways. To protect workers on site, Chevron has an approved Emergency Response Plan, prepared in accordance with Title 8 of the California Code of Regulations and the California Health and Safety Code that comprehensively outlines protocols to avoid and minimize potential injuries from a potential upset or accident involving hazardous materials. In the event of an emergency, persons working within Chevron’s property would receive assistance from Chevron’s Emergency Response Team as outlined in the Emergency Response Plan. By complying with the on-site protocols and training, the potential for the project to interfere with the Emergency Response Plan or evacuation plan would be minimized.

h. **No Impact.** The proposed project is not located in a wildland area and would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. The project would not alter the existing potential for the exposure of people or structures to wildfires in the project area.

Cumulative Impacts:

The proposed project would have no long-term impact on hazards, hazardous waste or hazardous materials usage and would not result in a cumulative impact when considered with the potential impacts of other projects in the area. Because use of hazardous materials (e.g., fuels, lubricants and stabilizing agent) by the proposed project during construction and by all other cumulative projects must be fully in accordance with applicable laws, and these laws are protective of public safety, cumulative impacts would be less than significant.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Prepare and Implement a Health and Safety Plan.** Implementation of the health and safety plan would reduce potential hazards to personnel conducting the work to a level that is less than significant.
- **Prepare and Implement a Truck Safety Plan.** Implementation of the truck safety plan would reduce potential impacts from accidents and spills to a level that is less than significant.
- **Implement Chevron's Emergency Response Plan.** Chevron's Emergency Response Plan procedures would reduce potential impacts from upsets or accidents involving hazardous materials, such as fuels for equipment or stabilizing agent, to a level that is less than significant.

Mitigation Measures Required by this Environmental Document: None are needed.

6.8 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?			✓	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				✓
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				✓
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?				✓
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				✓
f) Otherwise substantially degrade water quality?			✓	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?			✓	
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			✓	
j) Inundation by seiche, tsunami, or mudflow?				✓

Project Activities with the Potential to Create Hydrology or Water Quality Impacts:

- Stormwater management
- Sheet pile enclosure failure
- Stabilization and capping of the No. 1 Ox Pond

Setting:

Castro Cove is a shallow, protected embayment of San Pablo Bay located immediately north of the Chevron Richmond Refinery. The Cove is tidal, with extensive mudflats exposed twice a day at the low tides. At high tide the project site is covered with several feet of water. No substantial drainages enter the Cove within the proposed excavation area that would be enclosed by the sheet pile enclosure. Castro Creek and Wildcat Creek join just east of the Cove, enter the Cove on the east and empty into a 30- to 75-foot wide channel that transects a portion of Castro Cove in a generally north/south direction. The creek channel is located about 1,000 feet to the north and east of the excavation area.

The Cove is part of the San Pablo Basin Watershed, which is a sub-basin within the San Francisco Bay Basin. Water quality in the Cove is brackish, with some inflow of freshwater from Castro and Wildcat Creeks. Beneficial uses of San Pablo Bay include fishing, estuarine habitat, industrial service supply, fish migration, navigation, preservation of rare and endangered species, recreation, shellfish harvesting, fish spawning and wildlife habitat (Water Board 1995).

The No. 1 Ox Pond is located within the Chevron Richmond Refinery. Rain that falls on the site drains to a surface channel that runs along the east side of the Passes. Water flows southward to a pump station, which pumps the stormwater to the Refinery's wastewater treatment system. The treated water is tested and discharged in accordance with the Refinery's National Pollutant Discharge Elimination System (NPDES) permit. Rain that percolates into the No. 1 Ox Pond is contained by the Refinery's groundwater protection system, by the underlying low permeability Bay Muds, and by the upward hydraulic gradient in this portion of the Refinery.

Discussion:

a. **Less than Significant.** The proposed project would acquire from the Water Board a Water Quality Certification under Section 401 of the Clean Water Act and would comply with the water quality standards for San Francisco Bay in the vicinity of the project site. Preliminary tests indicate that the decant water generated by the placement of sediments on the No. 1 Ox Pond would be suitable for permitted discharge to the Bay. Final polishing may be performed, if needed. Regardless, decant water would be sampled and analyzed, and if needed, treated prior to permitted discharge to the Bay.

b. **No Impact.** The proposed project area is underlain by low permeability Bay Mud and the proposed hydraulic dredging and stabilization activities would not involve or deplete groundwater supplies, or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

c. – e. **No Impact.** The proposed project would not alter the existing surface water drainage pattern of the project site. The proposed project would not create additional stormwater run-off that would exceed the capacity of existing or planned stormwater control systems. The restoration area is located on a mudflat area of Castro Cove that is subject to tidal inundation and drying up to two times per day. The temporary sheet pile enclosure would prevent tidal action within the restoration area, however, it would not

alter the overall drainage pattern in Castro Cove, Castro Creek or San Pablo Bay. The area would be restored to its natural drainage when remediation is complete. The No. 1 Ox Pond is located within the Refinery and, after the project is complete, stormwater generated by the site would be managed as it is now, in accordance with the Refinery's NPDES permit.

f. **Less than Significant.** Most project activities are expected to be completed during dry weather. Should hydraulic dredging and stabilization activities extend into rainy months stormwater from the No. 1 Ox Pond would be managed in combination with decant water from the hydraulic dredging operation. The combined stormwater and decant water would be tested and treated, as necessary, prior to permitted discharge to the Bay. Thus, the project would not substantially degrade water quality.

g. **No Impact.** The proposed project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. No housing is proposed for the project.

h. **Less than Significant.** The majority of the restoration area is located between mean higher high water and mean lower low water and is therefore within the 100-year flood zone. On-shore areas are mostly outside the 100-year flood zone except for areas within a few feet of the shore. The sheet pile enclosure would close off a portion of Castro Cove but is not expected to cause upstream flooding because there are no substantial drainages flowing into the proposed enclosure area. No permanent structures would be constructed within the on-shore portion of the project site. Therefore, the project would not result in a change to existing conditions in terms of restrictions to flood waters in the 100-year flood zone and potential impacts would be less than significant.

i. **Less than Significant.** The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee. Although the proposed project site involves construction of a temporary sheet pile enclosure, no structures or people are located downstream in the 100-year floodplain that would be threatened by failure of the enclosure. There would be some risk to workers should the enclosure fail during low tide. This potential hazard would be addressed by emergency evacuation procedures for site personnel in the project health and safety plan. Thus, the potential impact would be less than significant.

j. **No Impact.** The proposed project site is not in a location that could potentially be threatened by a seiche, tsunami, or mudflow. The San Francisco Bay is not prone to seiches (standing waves resulting from oscillations in enclosed bodies of water). Potential hazards from mudslides would not be significant due to the flat topography of the site and because the site is not located downslope of potential mudflow sources. Tsunamis or large sea waves caused by undersea earth movements are greatly attenuated as they pass through the Golden Gate. The highest wave known to have occurred in the bay was in March 1964 resulting from the Alaskan earthquake of that year. The wave reached a height of 7.5 feet at Fort Point (Golden Gate). A wave of this size would be much lower by the time it reached Castro Cove, which is further sheltered by Point

Molate. The wave is not expected to overtop the sheet pile enclosure and this impact would therefore be less than significant.

Cumulative Impacts:

The project would not have any long-term discharges and thus is not expected to reduce or impair water quality when considered in combination with other projects. The removal of contaminants from the Bay and the capping of the No. 1 Ox Pond are, in fact, expected to have the beneficial effects of contributing to improved water quality in San Francisco Bay and providing greater protection for wildlife in the project vicinity. The site would be restored to its existing surface water drainage condition upon project completion and would have no long-term effect on local hydrology. Short-term construction-related impacts would be addressed by the water quality certification issued by the Water Board. Any potential localized short-term impacts would be fully mitigated by these actions and would not result in cumulative impacts when considered in combination with other projects.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Prepare and Implement a Health and Safety Plan.** Implementation of the health and safety plan would reduce potential hazards to personnel conducting the work to a level that is less than significant.

Mitigation Measures Required by this Environmental Document: None are needed.

6.9 LAND USE AND PLANNING

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?				✓
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				✓
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				✓

Project Activities with the Potential to Create Land Use and Planning Impacts:

- Placement of temporary fill such as a sheet pile enclosure in the Cove
- Removal of sediments from the Cove
- Stabilization and capping of the No. 1 Ox Pond

Setting:

The proposed project is within the City of Richmond. The City's land use designations occurring in the project site include Heavy Industrial and Open Space (offshore) (City of Richmond 1994). There are no specific policies pertaining to the land use designations or zoning districts that occur within the project site. Because the proposed project would not alter existing land uses, the project would be consistent with policies set forth in the City of Richmond General Plan.

Dredging and fill in the Bay are regulated by the BCDC, the USACE, and the Water Board. Also participating are the California Department of Fish and Game, the National Marine Fisheries Service and the USFWS who provide technical assistance and formal consultation for threatened and endangered species during the permitting process.

The following permits must be obtained prior to commencement of the proposed project:

- USACE Dredging Permit under Section 404 or the Clean Water Act
- Water Board Section 401 Clean Water Act Water Quality Certification; and
- BCDC Permit under the McAteer Petris Act.

Discussion:

- No Impact.** The project site is within Castro Cove and the Chevron Richmond Refinery and thus it would not physically divide an established community.
- No Impact.** The proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but

not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Acquisition of permits from the USACE, Water Board and BCDC would ensure that the proposed project does not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

c. **No Impact.** There are no habitat conservation plans or natural community conservation plans applicable to the project site.

Cumulative Impacts:

The project would not cause a change in land use and does not conflict with applicable land use plans, policies or regulations. Thus, it would not cause a cumulative impact when considered in combination with other projects in the area.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.10 ENERGY AND MINERAL RESOURCES

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				✓
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				✓
c) Use non-renewable resources in a wasteful and inefficient manner?				✓
d) Conflict with adopted energy conservation plans?				✓

Project Activities with the Potential to Create Energy or Mineral Resource Impacts:

- None

Setting and Discussion:

a. – d. **No Impact.** There are no known mineral resources located near the project site. The proposed project would not consume significant amounts of non-renewable resources. Therefore, no impacts to energy or mineral resources would occur.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.11 NOISE

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			✓	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				✓
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				✓
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				✓

Project Activities with the Potential to Create Noise Impacts:

- Driving of sheet piles
- Operation of diesel-powered heavy equipment
- Operation of diesel-powered trucks to transport sediments on site and to landfill

Setting:

The project site is an embayment on San Pablo Bay, which is distant from most sensitive receptors, and the No. 1 Ox Pond, which is within the Chevron Richmond Refinery. The closest noise-sensitive land uses (residential areas) are about 1.5 miles to the east and 1.1 miles south of the project area within the City of Richmond. The area adjacent to the site is industrial and occupied by the Chevron Richmond Refinery.

Discussion:

a. **Less than Significant.** The project site is located adjacent to the Chevron Richmond Refinery, with no residential or other sensitive receptors within one mile of the site. The greatest potential source of noise would be pile driving, which would occur 1.5 miles from the nearest sensitive receptor. However, the impact would be temporary, lasting two months or less, and would be mitigated by the use of a vibratory hammer, which produces less noise than a percussion hammer. No impacts to people or sensitive

land uses outside of the project site would occur. Therefore, a quantitative analysis of potential impacts due to increased noise levels is not warranted for the project.

The only persons that would be exposed to noise above existing levels would be on-site workers or Chevron employees working on adjacent areas. Construction workers would experience the greatest impact due to construction noise level increases. A project-specific health and safety plan would be implemented to ensure that workers are not exposed to excessive noise levels.

b. **Less than Significant.** The proposed project would result in some ground-borne vibrations that could potentially be felt by Chevron employees and/or construction workers on the project site. However, due to the industrial nature of the project site and the temporary nature of the potential ground-borne vibrations, this impact is considered to be less than significant.

c. **No Impact.** The proposed project would not result in permanent increases in ambient noise levels in the project vicinity. Once construction of the project is complete, noise levels in the project vicinity would return to existing noise levels.

d. **Less than Significant.** The proposed project would cause a temporary, periodic increase in ambient noise levels in the project vicinity due to construction activities at the project site. The temporary increase in noise levels would occur due to pile driving and engine noise associated with the operation of excavators, trucks, generators, and other various pieces of equipment. These increases, however, do not constitute a significant impact because there are no sensitive receptors in the vicinity of the project. The nearest sensitive receptors, such as schools, places of worship, and residential neighborhoods, are located approximately one or more miles east and south of the project site in the City of Richmond. The distance between the project site and the nearest sensitive receptors would adequately reduce noise from the proposed construction activities to a level that is less than significant. A project-specific health and safety plan would be implemented to ensure that workers are not exposed to excessive noise levels.

e. – f. **No Impact.** The proposed project site is not located within an airport land use plan, is not located within two miles of a public airport or a public use airport, and is not near a private air strip. Therefore, the project would not expose construction workers to excessive noise levels due to air traffic.

Cumulative Impacts:

The project would generate no long-term noise impacts, so there would be no permanent cumulative impacts. Once the project is complete, noise levels would return to their current levels. Construction noise would not affect off-site sensitive receptors, which are located more than one mile from the project site. Potential construction impacts would be temporary and fully mitigated by a hearing conservation plan contained in the project-specific health and safety plan and would not create temporary cumulative impacts.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Prepare and Implement a Health and Safety Plan.** Implementation of the health and safety plan would reduce potential noise hazards to personnel conducting the work to a level that is less than significant.

Mitigation Measures Required by this Environmental Document: None are needed.

6.12 POPULATION AND HOUSING

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				✓
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				✓

Project Activities with the Potential to Create Population and Housing Impacts:

- None

Setting and Discussion:

a. – c. **No Impact.** The project site is entirely within Castro Cove or an industrial site. The landside portion of the proposed project is entirely within the existing boundaries of the refinery. There are no residential uses on the site. The proposed project would not result in any population increase or induce the construction of housing in the area.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.13 PUBLIC SERVICES

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
Fire protection?				✓
Police protection?				✓
Schools?				✓
Parks?				✓
Other public facilities?				✓

Project Activities with the Potential to Create Public Services Impacts:

- None

Setting and Discussion:

a. **No Impact.** The proposed project would not impact existing public services. The Emergency Response Plan for Chevron's site involves coordination with the local public services, such as the police and fire departments, which would not change as a result of the project. As the project does not propose to create any additional infrastructure, the project would not result in the need for the City or County to establish additional public services.

The project would not require the use of public services beyond what is currently required under the refinery's ordinary operations. Therefore, it would not create a substantial new demand for new or additional facilities or personnel. In the event an emergency takes place, the refinery operations contingency plan is in place.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Implement Chevron's Emergency Response Plan.** Chevron's Emergency Response Plan procedures would reduce potential impacts from emergency situations to a level that is less than significant.

Mitigation Measures Required by this Environmental Document: None are needed.

6.14 RECREATION

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✓
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				✓

Project Activities with the Potential to Create Recreation Impacts:

- Excavation of sediments

Setting:

Castro Cove is a shallow embayment of San Pablo Bay and may offer very limited recreational opportunities for small boats with very shallow drafts, such as kayaks. There is no public access within the Cove. Cove access would be via San Pablo Bay. No on-shore recreational facilities are located at the project site.

Discussion:

a. – b. **No Impact.** The restoration area is located in very shallow mudflats (3 to 5 feet above mean lower low water) that are only approachable in shallow draft vessels during high tides. No public access is currently allowed in any land adjacent to the project site. Access to the shallowest areas of the Cove would be blocked by the sheet pile enclosure. These shallow areas have minimal recreational value because the shoreline is fenced to within a few feet of the water line to address security issues associated with the refinery. When the project is complete this area would be restored to its current condition.

Cumulative Impacts:

The project would not affect recreational facilities and thus would not cause cumulative impacts when considered in combination with other projects in the area.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.15 TRANSPORTATION AND TRAFFIC

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			✓	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?			✓	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				✓
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				✓
e) Result in inadequate emergency access?				✓
f) Result in inadequate parking capacity?				✓
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				✓

Project Activities with the Potential to Create Transportation or Traffic Impacts:

- Transport of stabilizing material, supplies and equipment
- Worker trips to and from the site

Setting:

Roadways

The main roadways that would be used by trucks and other vehicles traveling to and from the project site are Castro Street, Richmond Parkway, I-580 and I-80. Castro Street and the Richmond Parkway are the primary streets within the City of Richmond that vehicles would use to reach the project site. These roadways are four lane facilities, on which on-street parking is generally prohibited. Castro Street and the Richmond Parkway north of the project site are designated truck routes. Trucks carrying supplies to and from the site would travel on I-80 and I-580. Both freeways are designated truck routes in the project vicinity.

Operating characteristics of intersections and roadway segments are described by the concept of level of service (LOS). LOS is a qualitative description of an intersection and

roadway's operation based on delay and the volume to capacity ratio (v/c ratio). Typically, and generally accepted, LOS 'A' through 'D' are considered excellent to satisfactory service levels, LOS 'E' is undesirable, and LOS 'F' is unsatisfactory. The LOS ratings for intersections on Castro Street and the Richmond Parkway are satisfactory (LOS D) or better during morning and evening commute hours with the exception of the westbound ramp from Castro Street to I-580. The LOS for I-580 and I-80 vary depending on the time of day. The routes can be highly congested during the morning and evening commute hours. During the commute hours portions of the freeways along the proposed truck routes have LOS ratings of 'F.'

Discussion:

a. **Less than Significant.** The proposed project would not result in a long-term increase in traffic in the vicinity of the project site because when the project is complete it would revert to its current condition, which generates no traffic demand. However, the proposed project would cause a small, temporary increase in traffic on the local roads outside of the project site due to construction activities. The proposed project would temporarily increase traffic off-site as a result of importing stabilizing material and possibly soil cover for the No. 1 Ox Pond, importing temporary fill for the access ramp, and bringing equipment and supplies to the site, as well as the daily trips generated by the construction workforce.

Impacts on Local Arterials and Freeway System

The transport of stabilizing materials to the No. 1 Ox Pond is expected to generate approximately 40 truck round trips per day for approximately three months. These numbers are very small compared to the capacity and existing traffic volumes on local arterials and freeway systems (Table 6.15-1). Castro Street and the Richmond Parkway carry the greatest volumes of traffic during morning and evening commute hours. Within the project area, southbound volumes are highest in the morning (7:00 AM to 9:00 AM) while northbound volumes are highest in the evening (4:00 PM to 6:00 PM). Peak volumes are between approximately 1,200 and 2,400 vehicles per hour depending upon the intersection. At these volumes, traffic moves at satisfactory (LOS D) or better levels. Because the trucks would be less than one percent of peak traffic volumes—a small increase that would not decrease the levels of service at nearby intersections to undesirable or unsatisfactory levels (LOS E or F) during off-peak hours—the potential impact would be less than significant.

Table 6.15-1: Current Levels of Service on Traffic Routes

Route	Directional Peak Hour Volume	Level of Service
Castro St./Hensley St.	1,800	A
Richmond Parkway/ Gertrude St.	2,400	D
Castro St./ Chevron Gate 91	1,700	C
I-80	6,400	D
I-880	9,000	F

I-580	6,400	E
Highway 4	2,175	C

b. **Less than Significant.** Some roadways used for transporting stabilizing material, supplies and equipment to the site are designated as congested during commute hours but no permanent traffic increase would occur once the project is complete. The project would generate approximately 40 truck trips per day during the stabilization phase of the project. The potential impact of these trips would be mitigated by implementation of best management practices contained in the project's Traffic Control Plan. Implementation of these practices would reduce potential impacts to levels that are less than significant.

c. **No Impact.** The proposed project would not change air traffic patterns.

d. **No Impact.** The proposed project would not increase hazards due to traffic design features or incompatible uses along roadways. No changes in roadway design are proposed.

e. **No Impact.** The proposed project would follow protocols in Chevron's Emergency Response Plan to ensure that any activity on site would not conflict with emergency access.

f. **No Impact.** The proposed project would not result in inadequate parking capacity. The only parking component of the project involves temporary parking for the construction workforce. A temporary parking lot would be provided for construction workers commuting to the project site within Chevron's property. Construction crews would not be allowed to park in areas already designated for visitors of Chevron employees where no extra capacity exists.

g. **No Impact.** As the proposed project is temporary in nature, it would not have an adverse impact on the use of, or policies supporting, alternative transportation. Once the proposed activities are complete, the project would not place a demand on alternative transportation services.

Cumulative Impacts:

No permanent changes are proposed to the existing transportation network or its use after completion of the proposed project and the project would not generate additional traffic in the post-construction period. Thus, no permanent cumulative impacts are expected to occur. Implementation of a project-specific Traffic Control Plan, which is included in the project description, would mitigate potential impacts from construction traffic. In addition, because the project would generate a low level of project-related traffic (about 40 truck round trips per day, as well as small and temporary numbers of additional worker commute trips), the project would not result in cumulatively significant impacts to local intersections or roadway segments.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures:

- **Prepare and Implement a Traffic Control Plan.** Truck traffic levels would be managed to minimize potential impacts on local roadways according to best management practices described in a project-specific Traffic Control Plan.
- **Implement Chevron's Emergency Response Plan.** Chevron's Emergency Response Plan procedures would ensure emergency access is maintained and would reduce potential impacts to a level that is less than significant.

Mitigation Measures Required by this Environmental Document: None are needed.

6.16 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				✓
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				✓
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				✓
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				✓
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			✓	
g) Comply with federal, state, and local statutes and regulations related to solid waste?			✓	

Project Activities with the Potential to Create Impacts to Utilities or Service Systems:

- Stormwater management

Setting:

The East Bay Municipal Utility District (EBMUD) provides water and domestic wastewater services to the Chevron Refinery and the surrounding area. Process water and stormwater at the Refinery are treated and discharged in accordance with the Refinery's NPDES permit. Solid waste disposal is provided by the Richmond Sanitary Service, where non-hazardous solid waste is disposed at the West Contra Costa Sanitary Landfill in Richmond. The landfill is projected to close in 2006, at which time solid waste would be disposed at another local landfill.

Discussion:

a. – b. **No Impact.** The proposed project would not exceed the Water Board's wastewater treatment requirements. Furthermore, the proposed project would acquire

from the Water Board a Water Quality Certification under Section 401 of the Clean Water Act. The project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.

c. **Less than Significant.** The proposed project would not construct or expand stormwater drainage facilities. Please refer to the responses to Items c. – f. in Section 6.8, Hydrology and Water Quality, for a discussion of stormwater controls proposed for the project.

d. **No Impact.** The proposed project would have sufficient water supplies available to serve the project from existing entitlements and resources. No new or expanded entitlements are necessary.

e. **No Impact.** The project would not create a permanent discharge and thus would not require additional wastewater capacity from the local service provider.

f. **Less than Significant.** The project would not generate substantial volumes of material for disposal at a landfill. Impacted sediments would be placed within the No. 1 Ox Pond on Chevron property.

g. **Less than Significant.** The solid waste requirements of the proposed project would be minimal and are related only to the needs of the construction workforce. This temporary solid waste demand would be handled according to all local, state, and federal requirements regarding the handling and disposal of solid waste generated by construction workforces. The proposed project would not create any additional operational solid waste requirements beyond those currently required by Chevron's operation on site.

Cumulative Impacts:

The project would not require the construction of new water or wastewater treatment facilities, and would not contribute to a cumulative impact. In addition, use of energy resources would not increase during construction, and the project would not create long-term demand for electricity. Solid waste requirements would be minimal and there would be no long-term impacts on landfill capacities.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by project design measures or mitigation measures required by this environmental document: None.

Castro Cove Sediment Remediation Project-Specific Design Measures: None.

Mitigation Measures Required by this Environmental Document: None are needed.

6.17 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL IMPACTS WOULD THE PROJECT:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			✓	
c) Does the project have environmental effects, which would cause substantial adverse effects on human beings, either directly or indirectly?				✓

Discussion:

a. **Less than Significant with Mitigation.** With implementation of project-specific design measures and the mitigation measures established in the Initial Study and accepted by the project proponent, impacts having the potential to degrade the environment would be reduced to levels that are less than significant.

In the short-term, the proposed project would have the potential to impact the wetland environment in Castro Cove, including impacting sensitive plant and wildlife species and the overall function of the wetland environment. Because potential impacts were anticipated, project design measures have been incorporated that would avoid and mitigate anticipated impacts. Furthermore, mitigation measures are identified in this checklist to reduce other specific impacts to biological resources (including wetlands) to levels that are less than significant. Please refer to the Mitigation Monitoring and Reporting Plan for a summary of mitigation measures contained in this Initial Study and as part of the project design. In the long-term, the proposed project would result in a significant benefit to the environment in the form of a healthier wetland and aquatic habitat.

b. **Less than Significant.** The proposed project would not have a long-term cumulatively considerable impact because at project completion the site would be restored to its present condition, except that contaminated sediments would be removed from the Cove and the No. 1 Ox Pond would be capped. Removal of the contaminated

sediments and capping of the No. 1 Ox Pond would have a net beneficial effect on the environment. While the proposed project has the potential to create impacts during the construction phase, as noted in the cumulative impacts discussions for each topic area the potential impacts would be reduced to levels that are less than significant with implementation of project specific design measures and the mitigation measures established in the Initial Study and accepted by the project proponent. Thus, the project would not cause cumulative impacts when viewed in connection with other projects—past, present and future.

c. **No Impact.** Due to the lack of human occupancy in the project vicinity, no adverse environmental effects which would cause substantial adverse effects on human beings would occur. Overall, the proposed project would reduce the potential for human beings to come into contact with contaminants that could have an adverse effect on their health.

Summary:

The project would have a net beneficial effect on the mudflat environment and no permanent impact on the terrestrial environment. It would not affect cultural resources. There are no anticipated significant cumulative impacts of the project with any other past, present, or future projects. The project would not adversely affect human beings.

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8.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following summary checklist indicates those potentially significant environmental impacts identified in the analysis in Section 6 that have not been mitigated to a level that is less than significant by measures proposed as part of the project design or measures required by this environmental document.

<input checked="" type="checkbox"/> None Identified	<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture Resources
<input type="checkbox"/> Air Quality	<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural Resources
<input type="checkbox"/> Geology/Soils	<input type="checkbox"/> Hazards/Hazardous Materials	<input type="checkbox"/> Hydrology/Water Quality
<input type="checkbox"/> Land Use/Planning	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Noise
<input type="checkbox"/> Population/Housing	<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation
<input type="checkbox"/> Transportation/Traffic	<input type="checkbox"/> Utilities/Service Systems	<input type="checkbox"/> Mandatory Findings of Significance

Based on the analysis contained in this IS, none of the resources in the summary checklist above would be significantly impacted.

9.0 INCORPORATION OF MITIGATION MEASURES INTO THE PROPOSED PROJECT

This environmental document recommends mitigation measures that are intended to avoid, minimize or mitigate potential impacts. The measures are summarized here and described in greater detail in Section 6. Chevron, the project proponent, has indicated that it will implement these measures as part of the project, should the project be approved by the Water Board.

- **BIO-1: Protection measures for green sturgeon and steelhead (Central California Coastal ESU).** Either working within the resource agencies June 1 to November 30 work window or implementing the project-specific design measures would reduce potential impacts to fish during construction to levels that are less than significant.
- **BIO-2: Haze salt marsh harvest mouse and other small mammals from project site prior to beginning construction.** Removal of any small mammals from the

construction area prior to beginning work and preventing their re-entry would reduce potential impacts to the salt marsh harvest mouse and other small mammals to levels that are less than significant.

- **BIO-3: Conduct preconstruction survey for California black rail.** Surveying for rails and establishing buffer zones around their nests, if necessary, would reduce potential impacts to the California black rail to levels that are less than significant.
- **BIO-4: Conduct preconstruction survey for California clapper rail.** Surveying for rails and establishing buffer zones around their nests, if necessary, would reduce potential impacts to the California clapper rail to levels that are less than significant.
- **BIO-5: Discourage sensitive bird species from entering work area.** Discouraging sensitive bird species, such as the white-tailed kite and California brown pelican, from using the construction site would reduce potential impacts to these species to levels that are less than significant.
- **BIO-6: Conduct preconstruction survey for nesting saltmarsh common yellowthroat and San Pablo song sparrow.** Surveying for these species and establishing buffer zones around their nests, if necessary, would reduce potential impacts to these birds to levels that are less than significant.
- **BIO-7: Conduct preconstruction survey for sensitive plant species.** Surveying for sensitive plant species and establishing buffer zones around specimens or populations, if necessary, would reduce potential impacts to these plants to levels that are less than significant.
- **BIO-8: Restore Pacific cordgrass or California cordgrass habitat.** Backfilling of excavated areas and monitoring and replanting, if necessary, of cordgrass areas would reduce potential impacts to this habitat type to levels that are less than significant.
- **WET-1: Restore salt marsh.** Returning the marsh to excavation elevations by backfilling and discing of compacted areas would reduce potential impacts to salt marshes to levels that are less than significant.
- **WET-2: Restore mudflats.** Restoration of mudflats would improve habitat quality and reduce potential impacts to levels that are less than significant.

By signature of this document, the project proponent amends the project description to include the mitigation measures as set forth above.

Gerald O'Regan, Project Manager Chevron EMC for Chevron USA Date

DETERMINATION OF THE APPROPRIATE ENVIRONMENTAL DOCUMENT

On the basis of this evaluation:

_____ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

X _____ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

_____ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

_____ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

_____ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental document is required.

Signature

Date

Printed Name

Executive Officer

For
Region 2

APPENDIX A

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

This document presents the Mitigation Monitoring and Reporting Program for the Castro Cove Remediation Project. Section 21081.6 of the California Public Resources Code requires that:

A public agency shall adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. This mitigation monitoring program applies to mitigation measures adopted as part of EIRs or negative declarations. Mitigation monitoring is required on all projects after December 31, 1988.

The purpose of the mitigation monitoring program (program) is to ensure that the mitigation measures included in the Initial Study for the Castro Cove Sediment Remediation Project are implemented

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BIO-1: Protection measures for green sturgeon and steelhead (Central California Coastal ESU)

As part of the Long Term Management Strategy for dredging in San Francisco Bay, programmatic-level “environmental work windows” during which dredging can be performed without consultation have been designated by state and federal resource agencies (CDFG, USFWS, and NMFS). The Long Term Management Strategy imposes restrictions on dredging activities in San Francisco Bay including Castro Cove during migration of anadromous salmonid fish from December 1 to May 30. In general, dredging can be performed during the 6-month environmental work window from June 1 through November 30. This time period also coincides with the dry season, which typically occurs from April through October. Dredging is possible outside the work windows; however, consultation with the resource agencies would be required. Because there is no established work window for green sturgeon, consultation is always required for that species.

The project proponent will complete sheetpile installation within the work window or ensure that project design measures will mitigate impacts to fish species. Impacts from the sheet pile installation will be minimized by vibrating most sheet piles in place or hammer driving the remaining piles only during low tide if work occurs outside the June 1 to November 30 work window. The sheet pile enclosure will be sealed during high tide to trap water within. Before sealing the enclosure, an appropriately sized net will be installed during a low tide event when the mudflats are exposed so that fish can not enter and become entrapped within the enclosure as it refills. Once filled the final sheet piles would be installed to create the enclosure and isolate the area of hydraulic dredging from the Bay.

Impacts Mitigated: Adverse effects to green sturgeon and steelhead

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will review and approve project plans and specifications that include appropriate limitations on construction timing. Project proponent will provide a report documenting implementation of appropriate measures at end of construction.

Timing: **Start:** Before construction starts.

Complete: When construction is complete.

BIO-2: Haze salt marsh harvest mouse and other small mammals from project site prior to beginning construction

Hazing of the pickleweed habitat will be the primary method of minimizing impacts to salt marsh harvest mouse and other small mammals that might be present in the construction impact area. Hazing will be performed by a qualified biologist immediately before any habitat is disturbed. Once hazed and free of small mammals the area will be fenced off with silt fence to prevent the species from re-entering the impact area, eliminating the possibility of take resulting from project activities.

Impacts Mitigated: Adverse effects to salt marsh harvest mouse

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will review and approve project plans and specifications that include appropriate limitations on construction areas. Biologist will provide a report documenting implementation of measure before the start of construction.

Timing: **Start:** Before construction starts.

Complete: When construction is complete.

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BIO-3: Conduct preconstruction survey for California black rail.

Preconstruction nesting surveys will be performed by a qualified biologist for California black rail within 76 meters (250 feet) of the impact area. Surveys will be conducted during the nesting season between February and April prior to the start of construction. Black rail nests identified will have a 76-meter (250-foot) avoidance buffer marked with construction fencing. Temporary habitat loss of foraging habitat will be fully compensated by Mitigation Measure WET-2.

Impacts Mitigated: Adverse effects to California black rail

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will sign off that appropriate surveys have taken place before construction activity commences and that either no rails are present, or that appropriate measures have been taken to protect any California black rail.

Timing: **Start:** Surveys to be conducted before construction starts.

Complete: Buffer areas (if needed) to be maintained until construction is complete.

BIO-4: Conduct preconstruction survey for California clapper rail.

Preconstruction nesting surveys will be performed by a qualified biologist for California clapper rails within 229 meters (750 feet) of the impact area. The surveys will be conducted within the protocol survey window from January through mid-April prior to the start of construction. Clapper rail nests identified will have a 229-meter (750-foot) avoidance buffer marked with construction fencing. Temporary habitat loss of foraging habitat will be fully compensated by Mitigation Measure WET-2.

Impacts Mitigated: Adverse effects to California clapper rail

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will sign off that appropriate surveys have taken place before construction activity commences and that either no rails are present, or that appropriate measures have been taken to protect any California clapper rail.

Timing: **Start:** Surveys to be conducted before construction starts.

Complete: Buffer areas (if needed) to be maintained until construction is complete.

BIO-5: Discourage sensitive bird species from entering work area

Impacts to any sensitive foraging bird species will be avoided by having a biologist on site during construction to haze any special status species birds that land in the construction area to forage.

Impacts Mitigated: Adverse effects to sensitive bird species.

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will review and approve project plans and specifications that include requirements for on-site biologist. Biologist will provide a report documenting procedures for hazing before construction starts, and documenting implementation of measure at the end start of construction.

Timing: **Start:** When construction starts.

Complete: When construction is complete.

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BIO-6: Conduct preconstruction survey for nesting saltmarsh common yellowthroat and San Pablo song sparrow

Prior to construction, a survey will be conducted by a qualified wildlife biologist to determine the extent and location of any breeding individuals and their nests within 46 meters (150 feet) of the project area, if any. Any discovered nest that does not yet have eggs or fledglings will be removed to discourage the pair from breeding in or adjacent to the project construction areas. If a discovered nest already has eggs or fledglings, it will be clearly marked and avoided by a 46-meter (150-foot) construction buffer.

Impacts Mitigated: Adverse effects to nesting saltmarsh common yellowthroat and San Pablo song sparrow

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will sign off that appropriate surveys have taken place before construction activity commences and that either no nesting birds are present, or that appropriate measures have been taken to protect nesting birds.

Timing: **Start:** Surveys to be conducted before construction starts.

Complete: Buffer areas (if needed) to be maintained until construction is complete.

BIO-7: Conduct preconstruction survey for sensitive plant species

Preconstruction plant surveys will be conducted by a qualified botanist to identify whether sensitive species occur in the work area of disturbance. In the unlikely event that any of the plant species occurs in the impact area, the work area containing the sensitive plant specimen or population will be fenced off by construction fencing and the project will be redesigned to avoid work activities that could damage the plant. A biologist who is knowledgeable of the plant species' life history and habitat requirements will determine the appropriate buffer zone needed to protect the plant or plants during construction. A biologist will also be present during construction to ensure that the protected areas are not entered or otherwise disturbed.

Impacts Mitigated: Adverse effects to sensitive plant species

Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will sign off that appropriate surveys have taken place before construction activity commences and that either sensitive plants are present, or that appropriate measures have been taken to protect sensitive plant populations.

Timing: **Start:** Surveys to be conducted before construction starts.

Complete: Buffer areas (if needed) to be maintained until construction is complete.

BIO-8: Restore Pacific cordgrass or California cordgrass habitat

To promote regeneration of cordgrass in locations occupied by cordgrass prior to project implementation the area of disturbance will be refilled with clean bay mud or other fine muds and graded to match the natural contour of the tidal marsh promoting reestablishment of the species as described in the project description. Success of the native vegetation reestablishment will be monitored by a qualified botanist or restoration biologist for five years during which adaptive management will be used to achieve a native marshland habitat. Adaptive management measures could include elimination of non-native cordgrass clones.

Impacts Mitigated: Loss of cordgrass

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Lead Agency: Regional Water Quality Control Board (RWQCB)

Validation RWQCB will review and approve plans and specifications that include refilling disturbed areas with suitable muds to promote reestablishment of cord grass. Annual reports to be submitted by biologist/botanist documenting success of reestablishment. RWQCB will verify that cordgrass has become reestablished within five years after completion of construction.

Timing: **Start:** Appropriate specifications to be developed during design.
Monitoring of reestablishment to begin at the completion of construction.

Complete: When native cordgrass stand has become reestablished

WET-1: Restore Salt Marsh

The excavated salt marsh will be returned to its pre-project elevation by backfilling currently vegetated areas with clean Bay mud or other fine muds (Figure 3.0-1 of the Initial Study). Compacted areas will be disced, as necessary to ensure compaction of less than 85 percent. Any fencing that was installed at the beginning of the project to exclude salt marsh harvest mice from this area will remain in place until after the area has been disced. The project site will be monitored annually in September for five years or until the disturbed salt marsh areas have 80 percent aerial cover by native, obligate wetland plant species. If cover is less than 30 percent at year three post construction, then active revegetation will be implemented. If active revegetation is determined to be necessary, hazing of the pickleweed habitat will be performed as described in BIO-2 prior to the start of revegetation activities in order to avoid impacts to the salt marsh harvest mouse.

Impacts Mitigated: Loss of salt marsh

Lead Agency: U.S. Army Corps of Engineers and San Francisco Regional Water Quality Control Board

Validation RWQCB will sign off that applicant has coordinated with U.S. Army Corps of Engineers and obtained required permits as needed. Project proponent will submit maintenance and monitoring reports as required by permitting agencies.

Timing: **Start:** During design.

Complete: Mitigation will be complete at completion of specified monitoring period (5 years or until 80 percent cover is achieved).

WET-2: Restore Mudflats

The project action would remediate contaminated sediments, which would in and of itself improve beneficial uses of Castro Cove. The 1.5-acre backfilled area will be made level to mimic the shape and contour of the preexisting conditions, thus allowing for reestablishment of native vegetation community types (Figure 3.0-1 of the Initial Study). The backfilled area and mudflat area will be restored to intertidal habitat as before remediation.

Impacts Mitigated: Loss of mudflats

Lead Agency: U.S. Army Corps of Engineers and San Francisco Regional Water Quality Control Board

Validation RWQCB will sign off that applicant has coordinated with U.S. Army Corps of Engineers and obtained required permits as needed. Project proponent will submit maintenance and monitoring reports as required by permitting agencies.

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Timing: **Start:** During design.

Complete: Mitigation will be complete at completion of specified monitoring period.